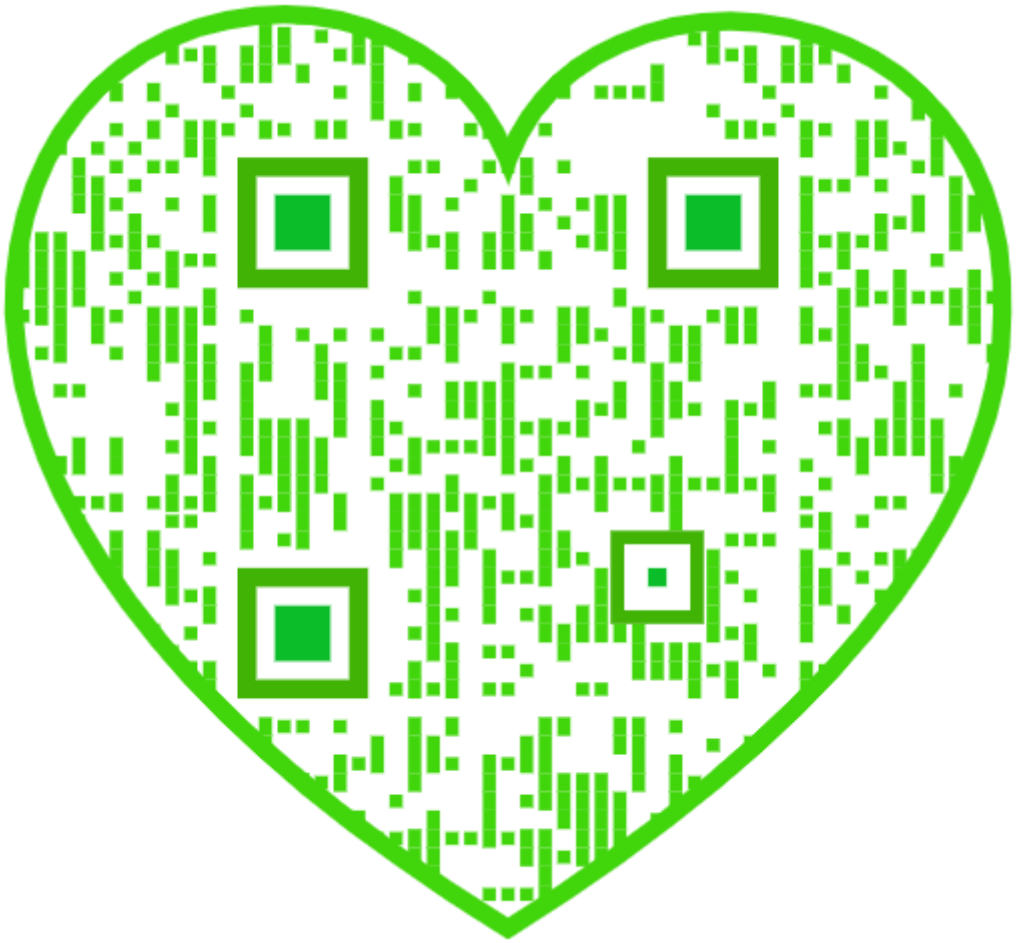

TRANSACTIONS

OF THE

AMERICAN ASSOCIATION

OF

OBSTETRICIANS AND GYNECOLOGISTS

VOL. XXIV

FOR THE YEAR 1911

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AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS

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NOTE.

The Association does not hold itself responsible for the views enunciated in the papers and discussions published in this volume.

DR. E. GUSTAV ZINKE, *Secretary*,
4 W. SEVENTH AVENUE, CINCINNATI.

[Minutes and discussions stenographically reported by WILLIAM WHITFORD, Chicago, Ill.]

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CONSTITUTION AND BY-LAWS

OF THE

AMERICAN ASSOCIATION

OF

OBSTETRICIANS AND GYNECOLOGISTS

TOGETHER WITH

MINUTES OF THE TWENTY-FOURTH ANNUAL MEETING

AMERICAN ASSOCIATION

OF

OBSTETRICIANS AND GYNECOLOGISTS.

CONSTITUTION.

I. The name of this Association shall be THE AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS.

II. Its object shall be the cultivation and promotion of knowledge in whatever relates to Abdominal Surgery, Obstetrics, and Gynecology.

MEMBERS.

III. The members of this Association shall consist of Ordinary Fellows, Honorary Fellows, Corresponding Fellows, and Senior Fellows.

The Ordinary Fellows shall not exceed one hundred and fifty in number.

The Honorary Fellows shall not exceed ten American and twenty-five foreign.

Candidates shall be proposed to the Executive Council at least one month before the first day of meeting, by two Fellows, and shall be balloted for at the annual meeting, a list of names having been sent to every Fellow with the notification of the meeting.

A two-thirds vote in the affirmative of all the members present shall be necessary to elect—fifteen Fellows at least being in attendance.

All candidates for active fellowship shall submit to the Executive Council, at least one month before the annual meeting, an original paper relating to Abdominal Surgery, Obstetrics, or Gynecology.

HONORARY FELLOWS.

IV. The power of nominating Honorary Fellows shall be vested in the Executive Council.

Their election shall take place in the same manner as that of Ordinary Fellows.

They shall enjoy all the privileges of Ordinary Fellows, excepting to vote or hold office, but shall not be required to pay any fee.

CORRESPONDING FELLOWS.

V. The Corresponding Fellows shall be recommended by the Executive Council and elected by the Association.

They shall enjoy all the priveliges of Ordinary Fellows, excepting to vote or hold office, and shall be entitled to a copy of the annual TRANSACTIONS.

They shall pay an annual fee of five dollars.

SENIOR FELLOWS.

Senior Fellows shall be nominated by the Executive Council, and elected by the Association as provided for in the election of Honorary Fellows, and they shall enjoy the same privileges as are accorded Corresponding Fellows.

OFFICERS.

VI. The officers of this Association shall be a President, two Vice-Presidents, a Secretary, a Treasurer, and six Executive Councillors.

The nomination of all officers shall be made in open session at the business meeting, and the election shall be by ballot.

The first five officers shall enter upon their duties immediately before the adjournment of the meeting at which they shall be elected, and shall hold office for one year.

["At the election next succeeding the adoption of these laws, the full number of Executive Councillors shall be elected; two for a term of three years, two for a term of two years, and two for a term of one year.

"At every subsequent election two Councillors shall be elected for a term of three years, and shall continue in office until their successors shall have been elected and shall have qualified."][1]

Any vacancy occurring during the recess may be filled temporarily by the Executive Council.

ANNUAL MEETINGS.

VII. The time and place of holding the annual meeting shall

[1] Amendment adopted September 21, 1898.

be determined by the Association or may be committed to the Executive Council each time before adjournment.

It shall continue for three days, unless otherwise ordered by vote of the Association.

AMENDMENTS.

VIII. This Constitution may be amended by a two-thirds vote of all the Fellows present at the annual meeting: *provided*, that notice of the proposed amendment shall have been given in writing at the annual meeting next preceding: and *provided, further*, that such notice shall have been printed in the notification of the meeting at which the vote is to be taken.

AMERICAN ASSOCIATION

OF

OBSTETRICIANS AND GYNECOLOGISTS.

BY-LAWS.

THE PRESIDING OFFICER.

I. The President, or in his absence, one of the Vice-Presidents, shall preside at all meetings, and perform such other duties as ordinarily pertain to the Chair.

The presiding officer shall be *ex-officio* chairman of the Executive Council, but shall vote therein only in case of a tie.

SECRETARY.

II. The Secretary shall attend and keep a record of all meetings of the Association and of the Executive Council, of which latter he shall be *ex-officio* clerk, and shall be entitled to vote therein.

He shall collect all moneys due from the members, and shall pay the same over to the Treasurer, taking his receipt therefor.

He shall supervise and conduct all correspondence of the Association; he shall superintend the publication of the TRANSACTIONS under the direction of the Executive Council, and shall perform all the ordinary duties of his office.

He shall be the custodian of the seal, books, and records of the Association.

TREASURER.

III. The Treasurer shall receive all moneys from the Secretary, pay all bills, and render an account thereof at the annual meetings, when an Auditing Committee shall be appointed to examine his accounts and vouchers.

EXECUTIVE COUNCIL.

IV. The Executive Council shall meet as often as the interests of the Association may require. The President, or any three members may call a meeting, and a majority shall constitute a quorum.

It shall have the management of the affairs of the Association, subject to the action of the house at its annual meetings.

It shall have control of the publications of the Association, with full power to accept or reject papers or discussions.

It shall have control of the arrangements for the annual meetings, and shall determine the order of the reading of papers.

It shall constitute a court of inquiry for the investigation of all charges against members for offences involving law or honor; and it shall have the sole power of moving the expulsion of any Fellow.

ORDER OF BUSINESS.

V. The Order of Business at the annual meetings of the Association shall be as follows:

1. General meeting at 10 o'clock A. M.
   - *a.* Reports of Committees on Scientific Questions.
   - *b.* Reading of Papers and Discussion of the same.
2. One business Meeting shall be held at half-past nine o'clock A. M. on the first day of the session, and another on the evening of the second day (unless otherwise ordered by vote), at which only the Fellows of the Association shall be present. At these meetings the Secretary's record shall be read; the Treasurer's Accounts submitted; the reports of Committees on other than scientific subjects offered; and all Miscellaneous Business transacted.

PAPERS.

VI. The titles of all papers to be read at any annual meeting shall be furnished to the Secretary *not later* than one month before the first day of the meeting.

No paper shall be read before the Association that has already been published, or that has been read before any other body.

Not more than thirty minutes shall be occupied in reading any paper before the Association.

Abstracts of all papers read should be furnished to the Secretary at the meeting.

All papers read before the Association shall become its sole property if accepted for publication; and the Executive Council may decline to publish any paper not handed to the Secretary *complete* before the final adjournment of the annual meeting.

QUORUM.

VII. The Fellows present shall constitute a quorum for all business, excepting the admission of new Fellows or acting upon amendments to the Constitution, when not less than fifteen Fellows must be present.

DECORUM.

VIII. No remarks reflecting upon the personal or professional character of any Fellow shall be in order at any meeting, except when introduced by the Executive Council.

FINANCE.

IX. Each Fellow, on admission, shall pay an initiation fee of twenty-five dollars, which shall include his dues for the first year.

Every Fellow shall pay, *in advance* (*i.e.*, at the beginning of each fiscal year) the sum of twenty dollars annually thereafter.

[A fiscal year includes the period of time between the first day of one annual meeting and the first day of the next.]

Any Fellow neglecting to pay his annual dues for two years may forfeit his membership, upon vote of the Executive Council.

The Secretary shall receive, annually, a draft from the President, drawn on the Treasurer, for a sum, to be fixed by the Executive Council, for the services he shall have rendered the Association during the year.

A contingent fund of one hundred dollars shall be placed annually at the disposal of the Secretary for current expenses, to be disbursed by him, and for which he shall present proper vouchers.

ATTENDANCE.

X. Any Fellow who shall neither attend nor present a paper for three consecutive years, unless he offer a satisfactory excuse, may be dropped from fellowship, upon vote of the Executive Council.

RULES.

XI. *Robert's Rules of Order* shall be accepted as a parliamentary guide in the deliberations of the Association.

AMENDMENTS.

XII. These By-Laws may be amended by a two-thirds vote of the Fellows present at any meeting; *provided*, previous notice in writing shall have been given at the annual meeting next preceding the one at which the vote is to be taken.

OFFICERS FOR 1911–1912.

PRESIDENT.

X. O. WERDER, PITTSBURG.

VICE-PRESIDENTS.

LOUIS FRANK, LOUISVILLE.
MAGNUS A. TATE, CINCINNATI.

SECRETARY.

E. GUSTAV ZINKE, CINCINNATI.

TREASURER.

HERMAN E. HAYD, BUFFALO.

EXECUTIVE COUNCIL.

AARON B. MILLER, SYRACUSE.
JOHN W. KEEFE, PROVIDENCE.
WILLIAM HENRY HUMISTON, CLEVELAND.
HUGO OTTO PANTZER, INDIANAPOLIS.
CHARLES L. BONIFIELD, CINCINNATI.
HERMAN E. HAYD, BUFFALO.

HONORARY FELLOWS.

*Deceased.

1899.—BALLANTYNE, JOHN WILLIAM, M.D., F.R.C.P.E., F.R.S. Edin. Lecturer on Midwifery and Gynecology, School of Medicine of the Royal Colleges, Surgeons' Hall, Edinburgh; Physician to the Royal Maternity Hospital, Edinburgh; formerly President of the Edinburgh Obstetrical Society; Examiner in Midwifery in the University of Edinburgh; Honorary Fellow of the Glasgow Obstetrical and Gynecological Society. 19 Rothesay Terrace, Edinburgh, Scotland.

1889.—BANTOCK, GEORGE GRANVILLE, M.D., F.R.C.S. Ed. Surgeon to the Samaritan Free Hospital. Broad Meadow, King's Norton, Birmingham, England.

1889.—BARBOUR, SIR A. H. FREELAND, M.A., B.S.C., M.D., F.R.C.P. Ed., F.R.S. Ed. Lecturer on Midwifery and Diseases of Women in the Edinburgh Medical School; Assistant Physician to the Royal Maternity Hospital; Assistant Physician for Diseases of Women to the Royal Infirmary; Physician to the Women's Dispensary; Fellow of the Edinburgh and London Obstetrical Societies, and of the British Gynecological Society; Corresponding Fellow of the Royal Academy of Medicine, Turin. 4 Charlotte Square, Edinburgh, Scotland.

1892.—*BOISLINIERE, L. CH., A.B., M.D., LL.D. Saint Louis, Mo. 1896.

1890.—CHAMPIONNIERE, JUST. LUCAS, M.D. 3 Avenue Montaigne, Paris, France.

1889.—*CHARPENTIER, LOUIS ARTHUR ALPHONSE, M.D Paris, France. 1899.

1888.—CORDES, AUGUST ELISEE, M.D. Member of the Royal College of Physicians, London; Fellow of the Obstetrical Society of London and of the British Gynecological Society; Corresponding National Member of the Obstetrical and Gynecological Society of Paris; Honorary Fellow of the Detroit Gynecologi-

cal Society; late "Chirurgien-adjoint" of the Obstetrical and Gynecological Clinic at the Maternity at Geneva; Consulting Accoucheur of the Miséricorde Hospital, etc.; Perpetual member of the Société Obstétricale de France, Paris, France. 3 Chemin du Square, Geneva, Switzerland.

1890.—*CORSON HIRAM, M.D. Plymouth Meeting, Pa. 1896.

1909.—CROFFORD, THOMAS JEFFERSON, M.D. (Transferred from Ordinary List.) Office, Goodwyn Institute, Memphis, Tenn.

1889.—CROOM, SIR J. HALLIDAY, M.D., F.R.C.P.E., F.R.C.S.E., F.R.S.E. Professor of Midwifery in the University of Edinburgh; Consulting Physician to the Royal Infirmary; Physician to the Royal Maternity Hospital; late President of the Royal College of Surgeons, Edinburgh. 25 Charlotte Square, Edinburgh, Scotland.

1889.—*DUNLAP, ALEXANDER, A. M., M.D. Springfield, O. 1894.

1888.—*EDIS, ARTHUR WELLESLEY, M.D. Lond. F.R.C.S., M.R.S.C.S. London, England. 1893.

1889.—*EKLUND, ABRAHAM FREDRIK, M.D. Stockholm, Sweden. 1898.

1891.—FERNANDEZ, JUAN SANTOS, M.D. Prado, No. 105, Havana, Cuba.

1891.—*FISHER, GEORGE JACKSON, A.M., M.D. Sing Sing, N. Y. 1893.

1889.—FREUND, WILLIAM ALEXANDER, M.D. Emeritus Professor and Director of the Clinic for Diseases of Women in the University of Strassburg. Kleiststrasse 9, Berlin W., Germany

1896.—*GASTON, JAMES MCFADDEN, A.M., M.D. Atlanta, Ga. 1903.

1892.—*GREEN, TRAILL, M.D., LL.D. Easton, Pa. 1897.

1894.—JACOBS, CHARLES, M.D. Professor of the Faculty of Medicine of Brussels; Secretary-General of the Permanent Committee of the Periodic International Congress of Gynecology and Obstetrics; Honorary President of the Belgian Society of Gynecology and Obstetrics; Honorary Fellow of the Gynecological Societies of New York and Chicago; Member of the Southern Surgical and Gynecological Association; Correspond-

ing Member of the Gynecological Society of Paris; Surgeon to the Brussels Polyclinic. 53 Boulevard de Waterloo, Brussels, Belgium.

1889.—*KEITH, THOMAS, M.D. London, England. 1896.

1889.—LEOPOLD, G., M.D. Professor in the Royal Clinic for Diseases of Women. 90 Pfotenhauerstrasse, Dresden, Germany.

1905.—MCGRAW, THEODORE A., M.D. 73 Cass Street, Detroit, Mich.

1894.—*MACLEAN, DONALD, M.D. Detroit, Mich. 1903.

1890. MARTIN, AUGUST, M.D. Emeritus Professor of Gynecology in the University of Greifswald. Keithstrasse 14, Berlin W. 62, Germany.

1895.—*MASTIN, CLAUDIUS HENRY, M.D., LL.D. Mobile, Ala. 1898.

1897.—MATHEWS, JOSEPH MCDOWELL, M.D. Professor of Diseases of the Rectum and Clinical Surgery, Hospital College of Medicine; President of the Kentucky State Board of Health; First Vice-President American Medical Association, 1898; President, 1899. 411 The Masonic, Louisville, Kentucky.

1891.—*MOSES, GRATZ ASHE, M.D. Saint Louis, Mo. 1901.

1905.—*MYERS, WILLIAM HERSCHEL, M.D. (*Founder.* Transferred from Ordinary Fellows.) Fort Wayne, Ind. 1907.

1889.—NICOLAYSEN, JULIUS, M.D. Professor of Surgery in the University of Norway. Christiania, Norway.

1910.—DE OTT, DIMITRIJ OSKAROVIC. Professor of Obstetrics and Gynecology in the Royal Pavloona Clinical Institute of St. Petersburg; President of the Fifth International Congress of Obstetrics and Gynecology. Wassily Ostrow, University Place, St. Petersburg, Russia.

1891.—PIETRANERA, E., M.D. Professor of Obstetrics in the Medical Department of the National University; Director of the Maternity Branch of the Clinical Hospital. 2711 Calle Rio Adaria, Buenos Ayres, Argentine Republic, S. A.

1889.—*SAENGER, MAX, M.D. Prague. 1903.

1890.—*SAVAGE, THOMAS, M.D., F.R.C.S. Eng. Birmingham, England. 1907.

1889.—SCHULTZE, BERNHARD SIGMUND, M.D. Professor of Gynecology; Director of the Lying-in Institute and of the Gynecological Clinic. 2 Sellierstrasse, Jena, Germany.

1890.—SEGOND, PAUL, M.D. Professor of Clinical Surgery of the Faculty of Medicine, Paris; Surgeon to the Salpétrière. 4 Quai Debilly, Paris, France.

1899.—SINCLAIR, SIR WILLIAM JAPP, M.A., M.D. (Aberd.), M.R.C.P. Professor of Obstetrics and Gynecology, Owens College, Victoria University; Physician to the Manchester Southern Hospital for Diseases of Women and Children. Garvock House, Dudley Road, Whalley Range, Manchester, England.

1894.—*SLAVIANSKY, KRONID, M.D. St. Petersburg, Russia. 1898.

1888.—*SMITH, J. GREIG, M.A., C.M., M.B., F.R.S.E. Bristol, England. 1897.

1896.—STERNBERG, GEORGE MILLER, A.M., M.D., LL.D. Surgeon General U. S. Army (Retired). 2005 Massachusetts Avenue, Washington, D.C.

1899.—*STORRS, MELANCTHON, A.M., M.D. (*Founder.* Transferred from Ordinary List.) Hartford, Conn. 1900.

1888.—*Tait, LAWSON, M.D., LL.D., F.R.C.S.E. Birmingham, England. 1899.

1905.—*TAYLOR, WILLIAM HENRY, M.D. *President*, 1888–1889. (*Founder.* Transferred from Ordinary List.) Cincinnati, Ohio. 1910.

1900.—*THORNTON, J. KNOWSLEY, M.B., M.C. Cambridge, England. 1904.

1888.—WILLIAMS, SIR JOHN, BART., M.D., F. R. C. P. Blaen Llynant, Aberystwyth, Cardiganshire, Wales.

1901.—WEBER, GUSTAV C. E., M.D., LL.D. Willoughby, Ohio.

1889.—VON WINCKEL, F., M.D. Professor of Gynecology and Director of the Royal Hospital for Women; Member of the Supreme Council and of the Faculty of Medicine in the University of Munich. 66 Ungererstrasse, Munich, Germany.

1905.—*WYMAN, WALTER, M.D. Surgeon General United States Public Health and Marine Hospital Service. Stoneleigh Court, Washington, D.C., 1911.

Total, twenty-five Honorary Fellows.

CORRESPONDING FELLOWS.

1899.—BEUTTNER, OSCAR, M.D. Privat-docent of the Faculty of Medicine. 2 Place de la Fasterie, Geneva, Switzerland.

1903.—CROZEL, G., M.D. Professor Libre of Gynecology. Collonges au Mont d'Or (Rhone), France.

1903.—ELLIS, GUILHERME, M.D. Chief Surgeon to the Real Sociedade de Beneficencia Portuguese Hospital. 6 Rua Aurora, S. Paulo, Brazil, S. A.

1891.—GRIFFIN, HERBERT SPOHN, B.A., M.D. Surgeon to Hamilton City Hospital; Examiner in Obstetrics, University of Toronto. 157 Main Street, Hamilton, Ontario, Canada.

1903.—LANE, HORACE MANLEY, M.D., LL.D. President of Mackenzie College, S. Paulo, Brazil. 184 Rua da Consolacao, S. Paulo, Brazil, S. A.

1891.—MACHELL, HENRY THOMAS, M.D., L.R.C.P. Ed. Lecturer on Obstetrics, Women's Medical College; Surgeon to St. John's Hospital for Women; Physician to Victoria Hospital for Sick Children and to Hillcrest Convalescent Home. 95 Bellevue Avenue, Toronto, Ontario, Canada.

1898.—WRIGHT, ADAM HENRY, B.A., M.D. Univ. Toronto, M.R.C.S., Eng. Professor of Obstetrics in the University of Toronto; Obstetrician and Gynecologist to the Toronto General Hospital and Burnside Lying-in Hospital, *President*, 1891. (Transferred from Ordinary List, 1898.) 30 Gerrard Street, East, Toronto, Ont., Canada.

Total, seven Corresponding Fellows.

ORDINARY FELLOWS.

*Deceased. †Resigned.

1902.—ABRAMS, EDWARD THOMAS, A.M., M.D. Consulting Surgeon to the Lake Superior General Hospital; Member of the Michigan State Medical Society; Member of the American Medical Association. Dollar Bay, Mich.

1890.—ASDALE, WILLIAM JAMES, M.D. Professor of Diseases of Women, Western Pennsylvania Medical College (Medical Department, University of Western Pennsylvania), Pittsburg, Pa. Patterson Heights, Beaver Falls, Pa.

1895.—BACON, JOSEPH BARNES, M.D. Professor of Rectal Diseases at the Post-Graduate Medical School; Instructor in Clinical Surgery in the Medical Department of Northwestern University, Chicago. Macomb, Ill.

1911.—BAINBRIDGE, WILLIAM SEAMAN, M. D., A. M., M. S., Sc. D. Adjunct Professor, New York Post-Graduate Medical School, 1902–6; Professor New York Polyclinic Medical School and Hospital since 1906; Surgeon, New York Skin and Cancer Hospital; Attending Surgeon, New York City Children's Hospitals and Schools; Consulting Surgeon, Manhattan State Hospital, New York Home for Dependent Crippled Children, College of Dental and Oral Surgery of New York; Consulting Gynecologist, St. Andrew's Hospital (New York) and St. Mary's Hospital, Jamaica, Long Island; Honorary President International Congress for Study of Tumors and Cancers, Heidelberg, Germany, 1906. 34 Gramercy Place, New York City.

Founder.—*BAKER, WASHINGTON HOPKINS, M.D. Philadelphia, Pa. 1904.

1895.—BALDWIN, JAMES FAIRCHILD, A.M., M.D. Surgeon to Grant Hospital, 125 South Grant Avenue. Residence, 405 E. Town Street, Columbus, Ohio.

1903.—Bandler, SAMUEL WYLLIS, M.D. Instructor in Gynecology in the New York Post-Graduate Medical School and

Hospital; Adjunct Gynecologist to the Beth Israel Hospital. 134 West Eighty-seventh Street, New York, N.Y.

1911.—BARRETT, CHANNING W., M. D. Gynecologist, Chicago Polyclinic School and Hospital; Professor of Gynecology and Clinical Gynecology, College of Physicians and Surgeons, Medical Department, University of Illinois; Attending Surgeon and Gynecologist, Marion Sims Sanitarium; Obstetrician, Cook County Hospital. 446 St. James Place, Chicago.

1889.—†BARROW, DAVID, M.D. Lexington, Ky. 1907.

1907.—BELL, JOHN NORVAL, M.D. Adjunct Professor of Obstetrics and Gynecology at Detroit College of Medicine; Gynecologist to Harper Hospital Polyclinic. Residence, 418 Fourth Avenue; Office, 506 Washington Arcade, Detroit, Mich.

1892.—BLUME, FREDERICK, M.D. Gynecologist to the Allegheny General Hospital and Pittsburg Free Dispensary; Obstetrician to the Roselia Maternity Hospital; Consulting Gynecologist to the Mercy Hospital; President of the Pittsburg Obstetrical Society, 1892. Office, Jenkins Building, Pittsburg, Pa.

1900.—BONIFIELD, CHARLES LYBRAND, M.D. Professor of Clinical Gynecology in the Medical College of Ohio; President of the Cincinnati Academy of Medicine, 1900; Gynecologist to the Good Samaritan, Christ's, and to Speer's Memorial Hospitals; formerly President of the Cincinnati Obstetrical Society; Secretary of the Section on Obstetrics and Gynecology, American Medical Association, 1901–4; Chairman, 1905; *Vice-president*, 1907. Residence, corner Washington and Gholson Avenues; Office, 409 Broadway, Cincinnati, Ohio.

1896.—BOSHER, LEWIS C., M.D. Professor of Practice of Surgery and Clinical Surgery, Medical College of Virginia; Visiting Surgeon, Memorial Hospital, Richmond. 422 East Franklin Street, Richmond, Va.

Founder.—BOYD, JAMES PETER, A.M., M.D. Professor of Obstetrics, Gynecology and Diseases of Children in the Albany Medical College; Gynecologist to the Albany Hospital; Consulting Obstetric Surgeon to St. Peter's Hospital; Fellow of the British Gynecological Society. 152 Washington Avenue, Albany, N. Y.

1889.—BRANHAM, JOSEPH H., M.D. Professor of Surgery in

the Maryland Medical College; Surgeon to the Franklin Square Hospital. 2200 Eutaw Place, corner Ninth Avenue, Baltimore, Md.

1894.—BROWN, JOHN YOUNG, M.D. Professor of Clinical Surgery in Saint Louis University; Chief Surgeon to St. John's Hospital; President of the Mississippi Valley Medical Association, 1898; *Vice-president*, 1905; *President*, 1906; *Executive Council*, 1907–8. Residence, 303 North Grand Avenue; Office, 612 Metropolitan Building, Saint Louis, Mo.

1889.—*BURNS, BERNARD, M.D. Allegheny, Pa. 1892.

1908.—BUTEAU, SAMUEL H. M.D. Former member of California State Board of Medical Examiners; formerly Visiting Surgeon to Almeda County Hospital. Residence, 1052 Telegraph Avenue; Office, 1155 Broadway, Oakland, Cal.

1906.—CANNADAY, JOHN EGERTON, M.D. Surgeon to the Charleston General Hospital; Surgeon to McMillan's Hospital Charleston; Fellow of the Southern Surgical and Gynecological Association; Non-resident Honorary Fellow of the Kentucky State Medical Association; Fellow West Virginia Medical Association, Virginia Medical Society, American Medical Association, Tri-State Society Virginia and the Carolinas, and American Association of Railway Surgeons. Office, Coyle and Richardson Building, Charleston, W. Va.

Founder.—CARSTENS, J. HENRY, M.D. Professor of Obstetrics and Clinical Gynecology in the Detroit College of Medicine; Gynecologist to the Harper Hospital; Attending Physician to the Woman's Hospital; Obstetrician to the House of Providence; President of the Detroit Gynecological Society, 1892. *Vice-president*, 1888–89; *President*, 1895; *Executive Council*, 1896–98. 620 Woodward Avenue, Detroit, Mich.

1895.—CHASE, WALTER BENAJAH, M. D. Visiting surgeon to the Bethany Deaconess Hospital; Consulting Obstetrician and Gynecologist to the Long Island College Hospital; Consulting Gynecologist to the Nassau Hospital, Mineola L. I.; Consulting Gynecologist to the Jamaica Hospital; President of the Council of the Long Island College Hospital; Fellow of the Brooklyn Gynecological Society (President, 1893); Member Medical Society County of Kings (President, 1892); Permanent Member Medical Society State of New York; Member of the Brooklyn Pathological Society; Member of the Associated Physicians of Long Island;

and Honorary Member of the Queens County Medical Society; *Executive Council*, 1899-1904. 1050 Park Place, Borough of Brooklyn, New York.

Founder.—†CLARKE, AUGUSTUS PECK, A.M., M.D. Cambridge, Mass. 1908.

1890.—*COLES, WALTER, M.D. Saint Louis, Mo. 1892.

1904.—CONGDON, CHARLES ELLSWORTH, M.D. Gynecologist to the City Hospital for Women. Office, 859 Humboldt Parkway, Buffalo, N. Y.

1906.—CRAIG, DANIEL HIRAM, M.D. Surgeon to Out Patients, Free Hospital for Women; Instructor in Gynecology in the Boston Polyclinic. 386 Commonwealth Avenue, Boston, Mass.

1901.—CRILE, GEORGE W., A.M., M.D. Professor of Clinical Surgery in the Western Reserve University Medical College; Surgeon to St. Alexis's Hospital; Associate Surgeon to Lakeside Hospital. *Vice-president*, 1907. Residence, 6203 Euclid Avenue; Office, Osborn Building, Cleveland, Ohio.

1894.—†CROFFORD, THOMAS JEFFERSON, M.D. Memphis, Tenn. 1909. (See Honorary Fellows.)

1905.—CROSSEN, HARRY STURGEON, M.D. Clinical Professor of Gynecology in Washington University; Gynecologist to Washington University Hospital; Associate Gynecologist to Mullanphy Hospital; Consulting Gynecologist to Bethesda, City and Female Hospitals. Residence, 4477 Delmar Avenue; Office, 310 Metropolitan Building, Saint Louis, Mo.

1897.—†CUMSTON, CHARLES GREENE, B.M.S., M.D. Boston, Mass. 1909.

Founder.—†*CUSHING, CLINTON, M.D. San Francisco, Cal. 1900. 1904.

1911.—DAVIS, ASA BARNES, M. D. Attending Surgeon of the Society of the Lying-in Hospital of the City of New York; Consulting Gynecologist to the Vassar Brother's Hospital, Poughkeepsie, N. Y. 42 E. 35th Street, New York.

1903.—DAVIS, JOHN D.S., M.D., LL.D. Professor of Surgery in the Birmingham Medical College; Surgeon to Hillman Hospital; ex-President of Jefferson County Medical Society and of the

Board of Health of Jefferson County. *Vice-president*, 1909. 2031 Avenue G., Birmingham, Ala.

1889.—*DAVIS, WILLIAM ELIAS B., M.D. Birmingham, Ala. 1903.

1902.—DEAVER, HARRY CLAY, M.D. Professor of Surgery in the Woman's Medical College of Pennsylvania; Surgeon to the Episcopal and the Stetson Hospitals and to the Children's Hospital of the Mary J. Drexel Home. 1534 North Fifteenth Street, Philadelphia, Pa.

1896.—DEAVER, JOHN BLAIR, M.D. Professor of Clinical Surgery at the University of Pennsylvania; Surgeon in Chief to the German Hospital; Consulting Surgeon to the Germantown Hospital. 1634 Walnut Street, Philadelphia, Pa.

1910.—DICE, WILLIAM GORDON, A. B., M. D. 240 Michigan Street, Toledo, Ohio.

1909.—DICKINSON, GORDON K., M.D. Surgeon to the City and Christ Hospitals; Consulting Surgeon to Bayonne Hospital. 280 Montgomery Street, Jersey City, N. J.

1892.—DORSETT, WALTER BLACKBURN, M.D. Professor of Obstetrics and Gynecology in the Marion Sims-Beaumont College of Medicine, Medical Department of Saint Louis University; Gynecologist to the Missouri Baptist Sanitarium, Evangelical Deaconess's Hospital and the Good Samaritan Hospitals; Consulting Gynecologist to the Saint Louis City and Female Hospitals; President of the Saint Louis Medical Society, 1892; President of the Missouri State Medical Society, 1900; Chairman of the Section on Obstetrics and Gynecology, American Medical Association, 1907. *Vice-president*, 1898; *President*, 1904; *Executive Council*, 1905–1907. Office, Linmar Building, corner Washington and Vandeventer Avenues, Saint Louis, Mo.

1889.—†*DOUGLAS, RICHARD, M.D. Nashville, Tenn. 1905 1907.

1892.—*DUFF, JOHN MILTON, A.M., M.D., Ph.D. Pittsburg, Pa. 1904.

1898.—*DUNN, JAMES C., M.D. Pittsburg, Pa. 1907.

1892.—*DUNNING, LEHMAN HERBERT, M.D. Indianapolis, Ind. 1906.

1899.—EASTMAN, THOMAS BARKER, A.B., M.D. Professor of the Medical and Surgical Diseases of Women, Central College of Physicians and Surgeons; Gynecologist to the City Hospital, City Dispensary, and Central Free Dispensary. 309 Pennway Building, Indianapolis, Ind.

1904.—ELBRECHT, OSCAR H., M.D. Superintendent and Surgeon in charge of the Saint Louis Female Hospital. 623–625 Metropolitan Building, Saint Louis, Mo.

1906.—ERDMANN, JOHN FREDERICK, M.D. Clinical Professor of Surgery in University-Bellevue Hospital Medical College; Surgeon to Gouverneur, St. Mark's, and Sydenham Hospitals. 60 West Fifty-second Street, New York, N. Y.

1895.—*FERGUSON, ALEXANDER HUGH, M.D. Professor of Surgery at the Chicago Post-Graduate Medical School; President of the Chicago Medical Society, 1910. Residence, 4619 Grand Boulevard; Office, Suite 300, Reliance Building, 100 State Street, Chicago, Ill., 1911.

1911.—FINDLEY, PALMER, B. E., M. D. Professor of Gynecology, College of Medicine, University of Nebraska. 418 Brandeis Theater Building, Omaha, Neb.

1910.—FOSTER, CURTIS SMILEY, A. B., M. D. Gynecologist to the Western Pennsylvania Hospital, Pittsburg. Residence, 5749 Ellsworth Avenue; Office, 308 Diamond Bank Building, Pittsburg, Pa.

1903.—FRANK, LOUIS, M.D. Professor of Abdominal and Pelvic Surgery in the Medical Department of Kentucky University; Surgeon to Louisville City Hospital; Surgeon and Gynecologist to the Broadway Infirmary. Residence, 1415 Fourth Avenue; Office, 400 The Atherton, Louisville, Ky.

1890.—*FREDERICK, CARLTON CASSIUS, B.S., M.D. Buffalo, N. Y. 1911.

1891.—GIBBONS, HENRY, JR., A.M., M.D. Dean and Professor of Obstetrics and Diseases of Women and Children in Cooper Medical College; Consulting Physician to the French and the Children's Hospitals. Residence, 199 Twentieth Avenue; Office, Union Square Building, 350 Post Street, San Francisco, Cal.

1902.—GILLETTE, WILLIAM J., M.D. Professor of Abdominal Surgery and Gynecology in the Toledo Medical College; Surgeon to Robinwood Hospital. 1613 Jefferson Street, Toledo, Ohio.

1895.—GOLDSPOHN, ALBERT, M.S., M.D. Professor of Gynecology, Post-Graduate Medical School; Senior Gynecologist, German Hospital; Attending Gynecologist, Post-Graduate and Charity Hospitals. *Vice-President*, 1901. Residence, 2120 Cleveland Avenue; Office, 34 Washington Street, Chicago, Ill.

1904.—*GOODFELLOW, GEORGE E., M.D. Los Angeles, Cal. 1910.

1903.—GUENTHER, EMIL ERNEST, M.D. Senior Assistant Gynecologist and Obstetrician to St. Barnabas's Hospital; Attending Surgeon to the German Hospital, Newark. 159 West Kinney Street, Newark, N. J.

1907.—GUITERAS, RAMON, M.D. Visiting Gynecologist to the City Hospital; Visiting Surgeon to Columbus Hospital; Consulting Surgeon to the French Hospital; Professor of Genitourinary Surgery at the Post-Graduate Medical School and Hospital, New York. 80 Madison Avenue, New York, N. Y.

1892.—*HAGGARD, WILLIAM DAVID, M.D. Nashville, Tenn. 1901.

1900.—HAGGARD, WILLIAM DAVID, JR., M.D. Professor of Gynecology, Medical Department University of Tennessee; Professor of Gynecology and Abdominal Surgery, University of the South (Sewanee); Gynecologist to the Nashville City Hospital; President of the Nashville Academy of Medicine; Secretary of the Section on Diseases of Women and Obstetrics, American Medical Association, 1898; Fellow (and Secretary) of the Southern Surgical and Gynecological Association; Member of the Alumni Association of the Woman's Hospital, N. Y. *Vice-president*, 1904. 148 Eighth Avenue, North, Nashville, Tenn.

1906.—HALL, JOSEPH ARDA, M.D. Clinical Assistant in Gynecology at the Miami Medical College, Cincinnati. 628 Elm Street, Cincinnati, Ohio.

1889.—HALL, RUFUS BARTLETT, A. M., M. D. Professor of Clinical Gynecology in the Ohio-Miami Medical College, Medical Department of University of Cincinnati; Gynecologist to the Cincinnati Hospital; Surgeon in charge of the Hall Hospital; Member of the British Medical Society; of the Southern Surgical

and Gynecological Association; of the American Medical Association; of the Ohio State Medical Society (President, 1900); of the Cincinnati Academy of Medicine (President, 1909); of the Cincinnati Obstetrical Society (Ex-President). *Vice-president*, 1891; *President*, 1900; *Executive Council*, 1904-1909. Berkshire Building, 628 Elm Street, Cincinnati, Ohio.

1902.—HAMILTON, CHARLES SUMNER, A.B., M.D. Professor of the Principles of Surgery in Sterling Medical College; Surgeon to Mt. Carmel and the Children's Hospitals. 142 South Garfield Street, Columbus, Ohio.

1910.—HARRAR, JAMES AITKEN, M. D. Attending Surgeon to the Lying-in Hospital of the City of New York. Residence and Office 29 East Seventy-seventh Street, New York, N. Y.

1894.—HAYD, HERMAN EMIL, M. D., M. R. C. S. Eng. Surgeon to the German Deaconess Hospital; Surgeon to the German Hospital. *Vice-president*, 1903; *Executive Council*, 1908-1910; *President*, 1911. 493 Delaware Avenue, Buffalo, N. Y.

1908.—HEDGES, ELLIS W., A.B., M.D. Visiting Surgeon to Muhlenberg Hospital, Plainfield, N. J. 703 Watchung Avenue, Plainfield, N. J.

Founder.—*HILL, HAMPTON EUGENE, M.D. Saco, Me. 1894.

1910.—HILL, ISADORE LEON, A. B., M. D. Clinical Instructor of Obstetrics at Cornell University Medical College; Visiting Obstetrician to the Red Cross Hospital; Attending Obstetrician to Sydenham Hospital. 616 Madison Avenue, New York, N. Y.

1891.—HOLMES, JOSUS BILLINGTON SANDERS, M.D. Professor of Obstetrics in the Southern Medical College; President of the Georgia State Medical Association, 1890; Member of the Southern Surgical and Gynecological Association; Member of the American Medical Association. Valdosta, Ga.

1891.—HOWITT, HENRY, M.D., M.R.C.S. Eng. Surgeon to the Guelph General and St. Joseph's Hospital, Guelph; Member of the British and Ontario Medical Associations; Medical Health Officer for the City of Guelph. *Vice-president*, 1895. 221 Woolwich Street, Guelph, Ontario, Canada.

1905.—HUGGINS, RALEIGH RUSSELL, M.D. Surgeon to St. Francis Hospital. *Vice-president*, 1910. 1018 Westinghouse Building, Pittsburg, Pa.

1895.—HUMISTON, WILLIAM HENRY, M.D. Associate Professor of Gynecology in the Medical Department of Western Reserve University; Gynecologist in Chief to St. Vincent's Charity Hospital; Consulting Gynecologist to the City Hospital; President of the Ohio State Medical Society, 1898. *Executive Council:* 1902–1903, 1908, 1910–1911. *President*, 1909. Residence, 2041 East Eighty-ninth Street; Office, 536 Rose Building, Cleveland, Ohio.

1898.—*HYDE, JOEL W., M.D. Brooklyn, N. Y. 1907.

1901.—ILL, CHARLES L., M.D. Surgeon to the German Hospital; Assistant Gynecologist to St. Michael's and St. Barnabas's Hospitals; Obstetrician to St. Barnabas's Hospital, Newark; Assistant Gynecologist to All Souls' Hospital, Morristown. 188 Clinton Avenue, Newark, N. J.

Founder.—ILL, EDWARD JOSEPH, M.D. Surgeon to the Woman's Hospital; Medical Director of St. Michael's Hospital; Gynecologist and Supervising Obstetrician to St. Barnabas's Hospital; Consulting Gynecologist to the German Hospital and the Bnoth Israel Hospital of Newark, N. J., to All Souls' Hospital, Morristown, N. J., and to the Mountain Side Hospital, Montclair, N. J.; Member of the Southern Surgical and Gynecological Association; Vice-president from New Jersey of the Pan-American Medical Congress of 1893; President of the Medical Society of the State of New Jersey, 1907. *Vice-president*, 1893; *President*, 1899; *Executive Council*, 1901–1903. 1002 Broad Street, Newark, N. J.

1897.—*INGRAHAM, HENRY DOWNER, M.D. Buffalo, N. Y. 1904.

1909.—JACOBSON, JULIUS H., M.D. Professor of Gynecology and Clinical Surgery, Medical Department Toledo University; Surgeon to Lucas City Hospital; Gynecologist to St. Vincent's Hospital, Toledo. 2050 Franklin Street, Toledo, O.

Founder.—*JARVIS, GEORGE CYPRIAN, M.D. Hartford, Conn. 1900.

1894.—†JAYNE, WALTER ADDISON, M.D. Denver, Col. 1908.

1910.—JENKS, NATHAN, B. S., M. D. Lecturer on Obstetrics at the Detroit College of Medicine; Visiting Physician to the Woman's Hospital and Infant's Home; Visiting Obstetrician to the New Providence Hospital, Detroit. Residence, 231 Burns Street; Office, 271 Woodward Avenue, Detroit, Mich.

1892.—*JELKS, JAMES THOMAS, M.D. Hot Springs, Ark. 1902.

1891.—†JOHNSTON, GEORGE BEN, M. D. Richmond, Va. 1910.

1906.—JONAS, ERNST, M.D. Clinical Professor of Surgery in Washington University Medical School; Surgeon in Charge of the Surgical Clinic at the Washington University Hospital; Gynecologist to the Saint Louis Jewish Hospital; Surgeon to the Martha Parsons Free Hospital for Children. Residence, 4495 Westminster Place; Office, 465 North Taylor Avenue, Saint Louis, Mo.

1910.—JONES, ARTHUR THOMS, M. D. Visiting Gynecologist to St. Joseph's Hospital, Providence. 81 Elm Grove Avenue, Providence, R. I.

1902.—KEEFE, JOHN WILLIAM, M.D. Attending Surgeon to the Gynecological Department of St. Joseph's Hospital; Attending Surgeon to the Rhode Island Hospital; Consulting Surgeon to the Providence Lying-in Hospital. *Vice-president*, 1908. *Executive Council*, 1911. 259 Benefit Street, Providence, R. I.

1910.—KENNEDY, JAMES W., M. D. Associate Gynecologist and Obstetrician to the Philadelphia Dispensary. 1409 Spruce Street, Philadelphia, Pa.

1911.—KING, JAMES E., M. D. Professor of Clinical Gynecology, Medical Department, University of Buffalo, New York; Attending Gynecologist, Buffalo General and Erie County Hospital and Good Samaritan Dispensary; Fellow Royal Society of Medicine, London, England. 1248 Main Street, Buffalo, N. Y.

1908.—KIRCHNER, WALTER C. G., A. B., M. D. Formerly superintendent and Surgeon in charge of the Saint Louis City Hospital. Office, Metropolitan Building, Saint Louis, Mo.

1898.—LANGFITT, WILLIAM STERLING, M.D. Surgeon in chief to St. John's Hospital. Office, 8047 Jenkins Building, Pittsburg. Pa.

1901.—LINCOLN, WALTER RODMAN, B.A., M.D. Lecturer on Gynecology, College of Physicians and Surgeons of Cleveland. Lennox Building, corner Erie Street and Euclid Avenue, Cleveland, Ohio. (Senior member).

1900.—*LINVILLE, MONTGOMERY, A. B., M. D. New Castle, Pa. 1910.

1910.—LOBENSTINE, RALPH WALDO, A. B., M.D. Attending Surgeon to the Lying-in Hospital of the City of New York; Gynecologist to Bellevue Hospital Dispensary. Residence, 780 Madison Avenue; Office, 155 East Seventieth Street, New York, N. Y.

1890.—LONGYEAR, HOWARD WILLIAMS, M. D. Professor of Gynecology and Abdominal Surgery in the Detroit Post-Graduate Medical School; Clinical Professor of Gynecology in the Detroit College of Medicine; Gynecologist to Harper Hospital; Physician to the Woman's Hospital; President of the Detroit Gynecological Society, 1889; Chairman of the Section on Obstetrics and Gynecology of the Michigan State Medical Society, 1892. *Vice-president*, 1893; *President*, 1905; *Executive Council*, 1906-1908. 271 Woodward Avenue, Detroit, Mich.

1911.—LOTHROP, EARL P., A. B., M. D. Gynecologist to the Buffalo Woman's Hospital. 153 Delaware Avenue, Buffalo, N. Y.

Founder.—*LOTHROP, THOMAS, M.D. Buffalo, N. Y. 1902.

1910.—LOTT, HENRY STOKES, M. D. 123 Cherry Street, Winston, N. C.

1896.—LYONS, JOHN ALEXANDER, M.D. Instructor in Gynecology at the Post-Graduate Medical School; Gynecologist and Lecturer to Nurses at the Chicago Hospital. Residence, 6848 Anthony Avenue; Office, 4118 State Street, Chicago, Ill.

1891.—*MCCANN, JAMES, M.D. Pittsburg, Pa. 1893.

1898.—*MCCANN, THOMAS, M.D. Pittsburg, Pa. 1903.

1910.—MCCLELLAN, BENJAMIN BUSH, A. B., M. D. Member of the National Legislative Council of the American Medical Association. Residence, 636 South Detroit Street; Office, 7 East Second Street, Xenia, Ohio.

1910.—MCGRAW, THEODORE A., JR., A. B., M. D. Clinical Professor of Gynecology in the Detroit College of Medicine; Attending Gyneocologist to St. Mary's Hospital; Associate Gynecologist to the Providence Hospital. Residence, 1710 Jefferson Street, Office 73 Cass Street, Detroit, Mich.

Founder.—MCMURTRY, LEWIS SAMUEL, A.M., M.D., LL.D. Professor of Gynecology in the Hospital College of Medicine; Gynecologist to Sts. Mary and Elizabeth Hospital; Fellow of the Edinburgh Obstetrical Society; Fellow of the British Gynecological Society; Corresponding Member of the Obstetrical

Society of Philadelphia and of the Gynecological Society of Boston; Member (President, 1891) of the Southern Surgical and Gynecological Association; President American Medical Association, 1905. *Executive Council*, 1891–1892, 1895–1905; *President*, 1893. Suite 542, The Atherton, Louisville, Ky.

1910.—McPHERSON, ROSS, A. B., M. D. Attending Surgeon to the Lying-in Hospital of the City of New York. Residence, 26 Grammercy Park, East; Office 20 West Fiftieth Street, New York, N. Y.

Founder.—MANTON, WALTER PORTER, M.D. Professor of Clinical Gynecology and Adjunct Professor of Obstetrics, Detroit College of Medicine; Gynecologist to Harper Hospital and the Eastern Michigan Asylum for the Insane; Vice-president of Medical Board of the Woman's Hospital and Foundling's Home; Consulting Gynecologist to the Northern Michigan Asylum and St. Joseph's Retreat; Gynecic Surgeon to the House of the Good Shepherd; President of the Detroit Academy of Medicine, 1892–1894; President of the Detroit Gynecological Society, 1890; Fellow of the British Gynecological Society; Fellow of the Royal Microscopical Society and of the Zoological Society of London. *Vice-president*, 1894. 32 Adams Avenue, W., Detroit, Mich.

1911.—MARVEL, EMERY, M. D. 1801 Pacific Avenue, Atlantic City, N. J.

Founder.—†*MAXWELL, THOMAS JEFFERSON, M.D. Keokuk, Iowa. 1902. 1905.

Founder.—MILLER, AARON BENJAMIN, M.D. Professor of Gynecology in the Medical Department of Syracuse University; Gynecologist to St. Joseph's Hospital, House of the Good Shepherd and Dispensary. *Vice-president*, 1899, 1904; *President*, 1910; *Executive Council*, 1911. 326 Montgomery Street, Syracuse, N. Y.

1905.—MILLER, JOHN D., M.D. Assistant to the Chair of Clinical Gynecology in the Medical College of Ohio, University of Cincinnati; Gynecologist to the Good Samaritan Hospital. N. E. Corner Clifton Avenue and W. McMillan Street, Cincinnati, Ohio.

1896.—*MOONEY, FLETCHER D., M.D. Saint Louis, Mo., 1897.

1911.—MOOTS, CHARLES W., B. S., M. D. Professor Anatomy and Clinical Surgery, Toledo Medical College, Medical Department, Toledo University; Gynecologist to Flower Hospital. 1140 The Nicholas, Toledo, O.

1907.—MORIARTA, DOUGLAS C., M.D. Senior Surgeon to Saratoga Hospital; Surgeon in chief to Saint Christian Hospital for Children; Director of State Experimental Station at Saratoga. 511 Broadway, Saratoga Springs, N. Y.

1904.—MORRIS, LEWIS COLEMAN, M.D. Professor of Gynecology and Abdominal Surgery in the Birmingham Medical College; Secretary, Medical Association State of Alabama, 1904; Member of Jefferson County Board of Health. *Vice-president*, 1911. 1203 Empire Building, Birmingham, Ala.

1890.—MORRIS, ROBERT TUTTLE, A.M., M.D. Professor of Surgery in the New York Post-Graduate Medical School and Hospital. *Vice-president*, 1892; *Executive Council*, 1906, 1908–1911; *President*, 1907. 616 Madison Avenue, New York, N. Y.

Founder.—*MOSES, GRATZ ASHE, M.D. Saint Louis, Mo. 1901. (See Honorary Fellows.)

1894.—MURPHY, JOHN BENJAMIN, A.M., M.D. Professor of Surgery and Head of Department North Western University; Chief Surgeon to Mercy Hospital and St. Joseph's Hospital; Attending Surgeon to Wesley Hospital and Columbus Hospital; Consulting Surgeon to Alexian Brothers', Cook County Hospitals; President of the American Medical Association, 1911. Residence, 3305 Michigan Avenue; Office, 400 Reliance Building, 100 State Street, Chicago, Ill.

Founder.—†*MYERS, WILLIAM HERSCHEL, M.D. Fort Wayne, Ind. 1904. 1907. (See Honorary Fellows.)

1904.—NEWMAN, LOUIS EDWARD, A.M., M.D. President of the Saint Louis Obstetrical and Gynecological Society, 1904. 5381 Waterman Avenue, Saint Louis, Mo.

1897.—NICHOLS, WILLIAM R., M.D. 295 Edmunton Street, Winnipeg, Manitoba, Canada.

1896.—NOBLE, GEORGE HENRY, M.D. Gynecologist to the Grady Hospital; Secretary to the Section on Obstetrics and Gynecology of American Medical Association, 1897; Member of the Southern Surgical and Gynecological Association. 186 South Pryor Street, Atlanta, Ga.

1903.—NOBLE, THOMAS BENJAMIN, M.D. Professor of Abdominal Surgery in the Central College of Physicians and Surgeons; Consultant in the Diseases of Women at the City Hospital, City Dispensary, and Protestant Deaconess's Hospital, Indianapolis. 427 Newton Claypool Building, Indianapolis, Ind.

1907.—OLMSTED, INGERSOLL, M.D. Surgeon to the City and St. Joseph's Hospitals, Hamilton, Ont. 215 South James St., Hamilton, Ontario, Canada.

1889.—†PAINE, JOHN FANNIN YOUNG, M.D. Galveston, Texas. 1904.

1899.—PANTZER, HUGO OTTO, M.D. Professor of Clinical Gynecology in the Indiana Medical College, Medical Department of Purdue University; Gynecologist to City Hospital, City Dispensary, St. Vincent's and Deaconess's Hospitals; Member of Indianapolis, Indiana State, Ohio Valley, Mississippi Valley, Medical Associations and Indianapolis Gynecological Association. *Executive Council*, 1907–1911. 224 North Meridian Street, Indianapolis, Ind.

1890.—PEARSON, WILLIAM LIBBY, M.D. 713 Union Street, Schenectady, N. Y.

1899.—PFAFF, ORANGE G., M.D. Adjunct Professor of Obstetrics and Diseases of Women in the Medical College of Indiana; Gynecologist to the City, Deaconess's, and St. Vincent's Hospitals. 1337 North Pennsylvania Street, Indianapolis, Ind.

1898.—PORTER, MILES F., M.D. Professor of Surgery in the Indiana Medical College, Medical Department of Purdue University; Surgeon to Hope Hospital; ex-President Indiana State Medical Society. *Vice-president*, 1902. 207 West Wayne Street, Fort Wayne, Ind.

Founder.—*POTTER, WILLIAM WARREN, M.D. Buffalo, N. Y. 1911

1903.—POUCHER, JOHN WILSON, M.D. Consulting Surgeon to Vassar Brothers Hospital, Poughkeepsie. 339 Mill Street, Poughkeepsie, N. Y.

Founder.—*PRICE, JOSEPH, M.D. Philadelphia, Pa. 1911.

1904.—REDER, FRANCIS, M.D. Chief of Clinic, Department of Rectal Diseases, Medical Department of Washington University;

Surgeon to Burlington Rink. 4629 Cook Avenue, Saint Louis, Mo.

Founder.—REED, CHARLES ALFRED LEE, A.M., M.D. Professor of Gynecology and Abdominal Surgery in the Cincinnati College of Medicine and Surgery and in the Woman's Medical College of Cincinnati; Surgeon to the Cincinnati Free Surgical Hospital for Women; Secretary-General of the First Pan-American Medical Congress, 1893; Member of the Southern Surgical and Gynecological Association; Fellow of the British Gynecological Society; President of the American Medical Association, 1901. *Executive Council*, 1890–1897; *President*, 1898. Rooms 60 and 62, The Groton, N. E. corner Seventh and Race Streets, Cincinnati, Ohio.

1905.—REES, CHARLES MAYRANT, M.D. Professor of Abdominal Surgery and Gynecology in Charleston Medical School; Member of the Medical Society of the State of South Carolina; Member of the American Medical Association and of the Southern Surgical and Gynecological Association. Residence, 169 Broad Street; Office, 98 Wentworth Street, Charleston, S. C.

1896.—*RHETT, ROBERT BARNWELL, JR., M. D. Charleston, S. C. 1901.

1889.—*ROHE, GEORGE HENRY, M.D. Baltimore, Md. 1899.

1909.—ROSENTHAL, MAURICE I., M.D. Surgeon to Saint Joseph's Hospital. 336 W. Berry Street, Fort Wayne, Ind.

1892.—*ROSENWASSER, MARCUS, M.D. Cleveland, Ohio. 1910.

1890.—*ROSS, JAMES FREDERICK WILLIAM, M.D.C.M., L.R.C.P., Lond., Eng. Professor of Gynecology, University of Toronto; Chief of Gynecological Service, Toronto General Hospital; Late President Ontario Medical Association; President Academy of Medicine, Toronto; Fellow of the Edinburgh Obstetrical Society. *Executive Council*, 1892–1896, 1905–1907; *President*, 1897. 481 Sherbourne, Corner Wellesley Street, Toronto, Ont., Canada. 1911.

1902.—RUNYAN, JOSEPH PHINEAS, M.D. Division Surgeon to the Choctaw, Oklahoma and Gulf Railroad; Secretary of the Arkansas State Medical Association, President, 1904. 1514 Schiller Avenue, Little Rock, Ark.

1906.—RUTH, CHARLES EDWARD, M.D. Professor of Surgery and Clinical Surgery in the Keokuk Medical College (College

of Physicians and Surgeons); Surgeon to the Chicago and Rock Island Pacific Railway. Des Moines, Iowa.

1903.—SADLIER, JAMES EDGAR, M.D. Consulting Surgeon to Highland Hospital, Poughkeepsie. *Vice-president*, 1909. 295 Mill Street, Poughkeepsie, N. Y.

1909.—SANES, K. ISADORE, Gynecologist to the West Penn Hospital; Consulting Gynecologist to the Montefiore Hospital, Pittsburg. Residence, 345 McKee Place; Office, Park Building, Pittsburg, Pa.

1910.—SCHILDECKER, CHARLES BUSHFIELD, M. D. Assistant Gynecologist to Western Pennsylvania Hospital; Coroner's Physician of Allegheny County. Residence 414 Rebecca Street; Office, 1105 Park Building, Pittsburg, Pa.

1904.—SCHWARZ, HENRY, M.D. Professor of Obstetrics, Medical Department of Washington University. *Vice-President*, 1911. 440 North Newstead Avenue, Saint Louis, Mo.

1901.—SCOTT, N. STONE, A.M., M.D. Professor of Surgery, College of Physicians and Surgeons, Cleveland; Consulting Surgeon to City Hospital; Consulting Surgeon to St. John's Hospital; Surgeon to the Out-patient Department of Cleveland General Hospital. Residence, 531 Prospect Avenue; Office, 603–604 Citizens' Building, Cleveland, Ohio.

1895.—SELLMAN, WILLIAM ALFRED BELT, M. D. Gynecologist to The Biedler and Sellman Sanitoraum; Member of the Medical and Chirurgical Faculty of Maryland; also of the Baltimore City Medical Society; also of the American Medical Association; the Gynecological and Obstetrical Association of Baltimore; Physician to The Margaret J. Bennett Home for Young Ladies. *Vice-president*, 1908; *Executive Council*, 1909–1910. 5 East Biddle Street, Baltimore, Maryland.

1889.—*SEYMOUR, WILLIAM WOTKYNS, A.B., M.D. Troy, N. Y. 1904.

1908.—SHERRILL, JOSEPH GARLAND, A.M., M.D. Professor of Surgery and Clinical Surgery at the University of Louisville. Office, Suite 542, The Atherton, Louisville, Ky.

1902.—*SIMONS, MANNING, M.D. Professor of Clinical Surgery in the Medical College of the State of South Carolina; Surgeon to St. Francis Xavier's Infirmary and to the City

Hospital. Residence, 22 Rutledge Avenue; Office, 111 Church Street, Charleston, S. C. 1911.

1899.—SIMPSON, FRANK FARROW, A.B., M.D. Gynecologist to the Allegheny General Hospital; Consulting Gynecologist to the Columbia Hospital. *Vice-president*, 1906. Jenkins Building, Pittsburg, Pa.

1901.—SKEEL, ROLAND EDWARD, M.D. Associate Clinical Professor of Gynecology in Western Reserve University; Gynecologist to St. Luke's, City, and Lutheran Hospitals; Consulting Surgeon to the Lakewood Hospital. 314 Osborn Building, Cleveland, O.

1910.—SMEAD, LEWIS FREDERIC, A. B., M. D. Surgeon to St. Vincent's Hospital, Toledo. Residence, 2921 Parkwood Avenue; Office, 242 Michigan Street, Toledo, Ohio.

1891.—SMITH, CHARLES NORTH, M. D. Surgical Chief of Flower Hospital; Gynecologist to St. Vincent's Hospital; *Vice-president*, 1910; 234 Michigan Street, Toledo, Ohio.

1904.—SMITH, WILLIAM S., M.D. Professor of Gynecology in the Maryland Medical College; Gynecologist to Franklin Square Hospital. 528 Hanover Street, Baltimore, Md.

1901.—STAMM, MARTIN, M.D. Professor of Operative and Clinical Surgery in the College of Physicians and Surgeons, Cleveland. 316 Napoleon Street, Fremont, Ohio.

1902.—STARK, SIGMAR, M.D. Professor of Obstetrics and Clinical Gynecology in the Cincinnati College of Medicine and Surgery; Gynecologist to the Jewish Hospital. 1108 East McMillan Street, Cincinnati, Ohio.

1908.—STEWART, DOUGLAS HUNT, M.D. Attending Surgeon at Saint Elizabeth's Hospital; Attending Gynecologist to the Red Cross Hospital. Residence, 128 West 86th Street, New York, N. Y.

1911.—STILLWAGEN, CHARLES A., M. D. 524 Pennsylvania Avenue, Pittsburg, Pa.

Founder.—*STORRS, MELANCTHON, A.M., M.D. Hartford Conn. (See Honorary List, 1899.) 1900.

1904.—SUTCLIFFE, JOHN ASBURY, A.M., M.D. Consulting Surgeon to St. Vincent's Infirmary; Consultant in Genitourinary

Diseases to the City Hospital and to the Protestant Deaconess's Hospital. Residence, 409 Central Avenue; Office, 155 East-Market Street, Indianapolis, Ind.

1899.—SWOPE, LORENZO W., M.D. Surgeon to the Consolidated Traction Company; Chief Surgeon to Wabash Railroad, Pittsburg Division; Surgeon to Western Pennsylvania Hospital; Surgeon to Passavant Hospital; Member of the Allegheny County Medical Society; Member of the American Medical Association. Residence, 4629 Bayard Street; Office, 1105 Park Building, Pittsburg, Pa.

1908.—TALLEY, DYER FINDLEY, A.M., M.D. Associate Professor of Surgery at Birmingham Medical College; Member of State Board of Medical Examiners, State Board of Health and Board of Censors. Residence, 1808 Seventh Avenue, Birmingham, Ala.

1901.—TATE, MAGNUS ALFRED, M.D. Professor of Obstetrics Miami Medical College; President Cincinnati Academy of Medicine. 1905. 19 West Seventh Street, Cincinnati, Ohio.

Founder.—†*TAYLOR, WILLIAM HENRY, M.D., Ph.D. Cincinnati, Ohio. 1898. (See Honorary Fellows.) 1910.

1895.—†THOMPSON, FRANK DANIEL, M.D. Fort Worth, Texas. 1910.

1908.—TORRANCE, GASTON, M.D. Surgeon to Saint Vincent's and the Hillman Hospitals in Birmingham. Residence, 1626 Eleventh Avenue, South; Office, 325 Woodward Building, Birmingham, Ala.

Founder.—*TOWNSEND, FRANKLIN, A.M., M.D. Albany, N. Y. 1895.

1907.—VANCE, AP MORGAN, M.D. Surgeon to Kentucky Masonic Widow's and Orphan's Home and Infirmary; Surgeon to Saints Mary and Elizabeth Hospital, Louisville. 835 South Fourth Avenue, Louisville, Ky.

Founder.—VANDER VEER, ALBERT, A.M., M.D., Ph.D. Professor of Didactic, Clinical, and Abdominal Surgery in the Albany Medical College; Attending Surgeon to the Albany Hospital; Consulting Surgeon to St. Peter's Hospital; Fellow of the American Surgical Association (President, 1906); Fellow of the British Gynecological Society; Member of the Southern Surgical

and Gynecological Association; Corresponding Member of the Boston Gynecological Society. *Executive Council*, 1889–1891, 1895–1905; *President*, 1892. 28 Eagle Street, Albany, N. Y.

1909.—WADE, HENRY ALBERT, M.D. Surgeon to Bethany Deaconess's Hospital; Associate Gynecologist to Williamsburg Hospital, Brooklyn. 495 Greene Avenue, Brooklyn, N.Y.

1909.—WALDO, RALPH, M.D. Gynecologist to Lebanon Hospital; Associate Surgeon to the Woman's Hospital of the State of New York. 54 W. 71st Street, New York, N.Y.

1891.—WALKER, EDWIN, M.D., Ph.D. Gynecologist to the Evansville City Hospital; President of the Indiana State Medical Society, 1892; Member of the American Medical Association and of the Mississippi Valley Medical Association; Member of the Southern Surgical and Gynecological Association; First Vice-president American Medical Association, 1907. *Vice-president*, 1901. 712 South Fourth Street, Evansville, Ind.

1907.—†WALKER, HENRY ORLANDO, M.D. Detroit, Mich. 1910.

1907.—WEISS, EDWARD ALOYSIUS, M.D. Assistant Gynecologist to Mercy Hospital; Obstetrician to Roselia Maternity Hospital; Associate Professor of Gynecology at Western Pennsylvania Medical College, Pittsburg. 714 Jenkins Building, Pittsburg, Pa.

1889.—WENNING, WILLIAM HENRY, A.M., M.D. Clinical Professor of Gynecology at the Miami Medical College; Chief of Staff and Gynecologist to St. Mary's Hospital. 5 Garfield Place, Cincinnati, Ohio.

Founder.—WERDER, XAVIER OSWALD, M.D. Profsseor of Gynecology at the Western Pennsylvania Medical College (Medical Department, University of Western Pennsylvania); Consulting Gynecologist at the Allegheny General Hospital; Gynecologist to the Mercy Hospital and Pittsburg Free Dispensary; Obstetrician to the Roselia Maternity Hospital; Consulting Gynecologist to St. Francis's Hospital; Consulting Surgeon to the South Side Hospital. *Treasurer*, 1888–1911. 714 Jenkins Building, Pittsburg, Pa.

1904.—WEST, JAMES NEPHEW, M.D. Professor of Diseases of Women and Secretary of the Faculty at the New York Post-

Graduate Medical School and Hospital. *Vice-president*, 1906. 71 West Forty-ninth Street, New York.

1896.—WESTMORELAND, WILLIS FOREMAN, M.D. Professor of Surgery at the Atlanta Medical College. Suite 241, Equitable Building, Atlanta, Ga.

1911.—WHITE, GEORGE R., B. S., M. D. Surgeon Park View Sanitarium. 2 Liberty E., Savannah, Ga.

1897.—†WHITBECK, JOHN F. W., M.D. Rochester, N. Y. 1910.

1909.—YATES, H. WELLINGTON, M.D. Lecturer on Obstetrics at Detroit College of Medicine; Obstetrician to St. Mary's Hospital. 1360 Fort Street, Detroit, Mich.

1907.—ZIEGLER, CHARLES EDWARD, A.M., M.D. Professor of Obstetrics in the University of Pittsburg; Medical Director of the Elizabeth Steele Magee Hospital for Women; Consulting Obstetrician to the Columbia Hospital and Consulting Obstetrician and Gynecologist to the Dixmont Hospital for the Insane. 354 South Highland Avenue, Pittsburg, Pa.

1900.—ZINKE, ERNST GUSTAV, M.D. Professor of Obstetrics and Clinical Midwifery in the Medical College of Ohio, University of Cincinnati; Obstetrician and Gynecologist to the German Hospital; Obstetrician to the Maternity Hospital. *President*, 1908; *Executive Council*, 1909–1911. *Secretary*, 4 West Seventh Avenue, Cincinnati, Ohio.

Total, one hundred and thirty-three Ordinary Fellows.

MINUTES OF THE PROCEEDINGS

AT THE

TWENTY-FOURTH ANNUAL MEETING

OF THE

AMERICAN ASSOCIATION

OF

OBSTETRICIANS AND GYNECOLOGISTS

HELD AT

THE SEELBACH

LOUISVILLE, KENTUCKY

SEPTEMBER 26, 27, AND 28, 1911

TWENTY-FOURTH ANNUAL MEETING.

SEPTEMBER 26, 27, AND 28, 1911.

The following-named Fellows were present:

BAINBRIDGE, WM. S.	NEW YORK.
BALDWIN, J. F.	COLUMBUS, OHIO.
BARRETT, CHANNING W.	CHICAGO, ILL.
BONIFIELD, C. L.	CINCINNATI, OHIO.
BROWN, JOHN YOUNG.	ST. LOUIS, MO.
CANNADAY, J. E.	CHARLESTON, W. VA.
CROSSEN, H. S.	ST. LOUIS, MO.
DAVIS, ASA B.	NEW YORK, N. Y.
DICE, W. G.	TOLEDO, OHIO.
DORSETT, WALTER B.	ST. LOUIS, MO.
FINDLEY, PALMER	OMAHO, NEB.
FOSTER, C. S.	PITTSBURG, PA.
FRANK, LOUIS	LOUISVILLE, KY.
HAGGARD, WM. D.	NASHVILLE, TENN.
HALL, RUFUS B.	CINCINNATI, OHIO.
HAYD, H. E.	BUFFALO, N. Y.
HUGGINS, R. R.	PITTSBURG, PA.
HUMISTON, WM. H.	CLEVELAND, OHIO.
JENKS, NATHAN	DETROIT, MICH.
KEEFE, JOHN W.	PROVIDENCE, R. I.
KING, JAS. E.	BUFFALO, N. Y.
KIRCHNER, WALTER C. G.	ST. LOUIS, MO.
LONGYEAR, H. W.	DETROIT, MICH.
LOTHROP, EMIL F.	BUFFALO, N. Y.
LOTT, H. S.	WINSTON, N. C.
MARVEL, EMERY	ATLANTIC CITY, N. J.
McCLELLAN, BEN R.	XENIA, OHIO.
McMURTRY, L. S.	LOUISVILLE, KY.
MILLER, A. B.	SYRACUSE, N. Y.
MILLER, JOHN D.	CINCINNATI, OHIO.
MOOTS, CHARLES W.	TOLEDO, OHIO.

MORIARTA, D. C.	SARATOGA SPRINGS, NEW YORK.
MORRIS, ROBERT T.	NEW YORK, N. Y.
NOBLE, THOS. B.	INDIANAPOLIS, IND.
PANTZER, H. O.	INDIANAPOLIS, IND.
PORTER, MILES F	FT. WAYNE, IND.
POUCHER, J. WILSON	POUGHKEEPSIE, N. Y.
REDER, F.	ST. LOUIS, MO.
REED, CHARLES A. L.	CINCINNATI, OHIO.
SADLIER, J. E.	POUGHKEEPSIE, N. Y.
SANES, K. J.	PITTSBURG, PA.
SCOTT, N. STONE	CLEVELAND, OHIO.
SHERRILL, J. GARLAND	LOUISVILLE, KY.
SKEEL, R. E.	CLEVELAND, OHIO.
SMEAD, LEWIS F.	TOLEDO, OHIO.
SMITH, C. F.	TOLEDO, OHIO.
STILLWAGEN, CHARLES A.	PITTSBURG, PA.
SWOPE, L. W.	PITTSBURG, PA.
TATE, MAGNUS	CINCINNATI, OHIO.
VANCE, A. MORGAN	LOUISVILLE, KY.
VANDER VEER, A.	ALBANY, N. Y.
WALKER, EDWIN	EVANSVILLE, IND.
WHITE, GEORGE R.	SAVANNAH, GA.
ZINKE, E. GUSTAV	CINCINNATI, OHIO.

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The following-named registered guests were extended the privileges of the floor and invited to participate in the discussions:

Albaiss, E.	Pittsburg, Pa.
Beard, S. L.	Shelbyville, Ky.
Cecil, John G.	Louisville, Ky.
Cole, Lewis Gregory	New York, N. Y.
Coon, Geo. S.	Louisville, Ky.
Day, Geo. H.	Louisville, Ky.
Farmer, Charles	Louisville, Ky.
Frank, L. Wallace	Louisville, Ky.
Frazier, Ben Charles	Louisville, Ky.
Graham, Hannah M.	Indianapolis, Ind.
Grant, H. Horace	Louisville, Ky.
Heyd, C. G.	New York, N. Y.
Heyd, Chas. Jordon	New York, N. Y.
Holmes, B. L.	Louisville, Ky.
Hutchings, B. M.	Terre Haute, Ind.

Kirk, J. A.	Louisville, Ky.
Koontz, Fred L.	" "
Long, W H.	" "
Lord, F. T.	" "
Lucas, Charles G.	" "
Lukins, J. B.	" "
Mathews, J. M.	" "
McChord, R. C.	Lebanon, Ky.
McCoy, S. C.	Louisville, Ky.
Meyer, Sam P.	" "
Meyers, Sidney J.	" "
Moren, Jno. J.	" "
Murrell, P. G. T.	" "
Owen, W. B.	" "
Percefull, A. C.	" "
Price, John W. Jr.	" "
Reed, Stuart F.	" "
Richardson, John B.	" "
Roberts, W. O.	" "
Rubel, Henry M.	" "
Simpson, F. C.	" "
Speidel, Edward	" "
Tuley, Harry Enos	" "
Vance, B. M.	" "
Wathen, Jno. R.	" "
Wathen W. H.	" "
Willmoth, A. D.	" "
Wilson, R. J.	Salem, Ind.

FIRST DAY—*Tuesday, September* 26, 1911.

Morning Session.—The association met in the Assembly Hall of the Seelbach Hotel, and was called to order at 9:30 A. M., by the President, Dr. Herman E. Hayd, Buffalo, New York, who said: We have with us this morning a distinguished guest, who is going to welcome us to this city. It gives me great pleasure to introduce to you the Honorable William O. Head, Mayor of Louisville, who will now deliver an address of welcome on behalf of the City of Louisville.

ADDRESS OF WELCOME BY MAYOR HEAD.

MAYOR HEAD said: *Mr. President and Fellows of the American*

Association of Obstetricians and Gynecologists: It is indeed an honor, representing the people of this great city, to come here and extend to you a welcome. I assure you that the gates and doors are all standing ajar, and we are glad you are here. We realize what your profession has done, and I am satisfied, when I see the members of the Committee of Arrangements and physicians who have been appointed to entertain you while here, it will be well done. We are proud of the physicians of our city, and we feel we have a right to be. And so it is all over this great world of ours. Physicians have invented from time to time many things that have been of great benefit to humanity, and in saying so I do not want to be considered as throwing bouquets at any one, but yours is the grandest profession known to man. The world owes much to you. While you as physicians and surgeons are credited with many valuable scientific discoveries, yet the beauty of it is that you as a grand and unselfish profession do not charge the public anything for what you discover. You do not get your inventions and discoveries patented. You give them to the people free. Therefore, gentlemen, it is with great pleasure that I welcome this distinguished body to our city. (Applause.)

I am told that we have distinguished visitors here from all over our country, including Canada, and we are glad you came here to hold your convention, and we trust much good will come out of this meeting. If you are looking for ideas, I hope you will find them here, and I want to assure you, again, that we would like you to see and know more of our city before you leave. Some of you may decide to locate in Louisville. We are looking for good people all the time. (Laughter.) We hail and claim you as benefactors of mankind, and I want to assure you that the sunshine of affection glows forever in Louisville. We love our friends, and as such we greet you to-day. (Applause.)

Reply by the President, DR. HAYD: Mr. Mayor, I am sure the association is very much obliged for the beautiful address you have given us and the generous welcome you have extended to us, and for that I express the thanks of the association. (Applause.)

ADDRESS OF WELCOME BY DR. LEWIS S. MCMURTRY ON BEHALF OF THE PROFESSION.

DR. MCMURTRY said: *Mr. President and Fellows of the American*

Association of Obstetricians and Gynecologists: It is scarcely necessary for me to say a word to this body of gentlemen who have met here and are more or less familiar with Louisville. You have met here before. This is the second time you have honored us with your presence.

Mr. President, there is every reason why those of us who live in Louisville should call your attention to the interest that attaches to this city of an historical character in medicine. It may not be known to you all, but within a stone's throw of this hall Professor Gross wrote his great "System of Surgery," and attained here that great distinction which was rounded out and completed afterward at Jefferson Medical College in Philadelphia. I may be pardoned for mentioning, also, that the elder Flint wrote his "System of Medical Practice" here in this city, and that the younger Flint pursued his medical studies here and graduated in our university. It is of especial interest to many of you to know that Henry Miller wrote his epoch-making work on obstetrics in this city, taught here, and died here, and of the great works on medicine, surgery and obstetrics that were ever put out in America, I do not believe any three works ever so much influenced and moulded the practice of medicine in these various departments as did those three great treatises. (Applause.)

We have had the honor in Louisville of sending medical teachers to the East repeatedly, and we have a great deal of satisfaction in the historic interest that attaches to the great events that have occurred in our profession and its members who have settled about the falls of the Ohio.

There is one thing relating to the medical profession here that may interest you. It is of local interest, and we point to it with a great deal of satisfaction at the present time. You are all thoroughly conversant with the great revolution in medical education that has swept over the country. I regard it as one of the most beneficent influences that has occurred within the last one hundred years in medicine, and one that is destined to do much to advance our profession in its influence, in its position and rank with the other nations of the world, that is, the proprietary medical school is disappearing. We had here in this city four years ago five medical schools. Now we have one. (Applause.) I know of no city in the United States where the profession, prompted by motives of professional worth and a desire to do what was right, has made greater sacrifices personally

than we have made here, in order to have one first-class medical school, instead of four or five snide schools. (Applause.)

I wish to extend to you, in behalf of the medical profession of this city, a cordial welcome. You must consider that every physician in Louisville is a member of the Committee of Arrangements. Our county society has authorized that you be cordially welcomed here, but I welcome you not only as a body, but as individuals, and we are greatly delighted to have you with us. (Applause.)

RESPONSE BY DR. CHARLES N. SMITH, TOLEDO, OHIO.

DR. SMITH said: *Mr. President and Fellows of the American Association of Obstetricians and Gynecologists:* It is about eighteen or nineteen years since my first visit to Louisville, and at that time I came here with a letter of introduction from our late lamented friend, Dr. Isaac Newton Love, of St. Louis, and that letter bore the mystic slogan, which was then powerful in the Mississippi Valley, namely, "Feed him; water him; be kind to him." (Laughter.) And I remember that some of the Louisville men did feed me, but I have no recollection of their watering me. I know they were kind to me. (Applause.)

When I arrived here yesterday at noon the Louisville profession took the same means of entertainment they did a good many years ago. But I wish to say to Dr. McMurtry that this association thankfully accepts his welcome to this city. We are glad to meet here. We know Louisville of old. We know the profession. We know, as Dr. McMurtry has said, that Louisville has given to the medical profession many men of note; many men who have been gladly chosen by the Eastern cities and Eastern colleges as the leaders in medicine and surgery.

I believe that this Twenty-fourth Annual Meeting of the association will be one of our most successful ones, and again I thank Dr. McMurtry and the medical profession of the city in your behalf for the kindly welcome that he has given us. (Applause.)

DR. LOUIS FRANK, Chairman of the Committee of Arrangements, announced that at the close of the morning session, a luncheon would be given to the Fellows and guests of the association at the Pendennis Club; that to-morrow (Wednesday), after the morning session, the members would be taken to the

Country Club, where luncheon would be served, and after luncheon the afternoon session would be held in one of the halls of the Club.

Papers were then read as follows:

1. "Another Protest against the Routine Use of Purgatives," by Dr. Edwin Walker, Evansville, Indiana.

Before discussing Dr. Walker's paper, President Hayd extended to the guests present the privileges of the floor, and invited them to participate in the discussions.

Dr. Walker's paper was then discussed by Drs. Zinke, Longyear, Humiston, Mathews, Pantzer, Bonifield, and Baldwin, after which Dr. Walker closed the discussion.

2. "Treatment of Sliding Hernia," by Dr. Walter C. G. Kirchner, Saint Louis, Missouri.

This paper was discussed by Dr. Brown, and in closing by the essayist.

3. "Angioma of the Uterus, Bladder, and Broad Ligament, with Report of Operation and Cure," by Dr. Hugo O. Pantzer, Indianapolis, Indiana.

Discussed by Drs. Dorsett, Poucher, Reder, Bonifield, and in closing by the author of the paper.

4. "Congenital Multicystic Mucoid Tumor of Small Intestine," by Dr. H. W. Longyear, Detroit, Michigan.

Discussed by Dr. Pantzer, and in closing by the essayist.

5. "Diseases of the Thyroid Gland in Women," by Dr. Miles F. Porter, Fort Wayne, Indiana.

This paper was discussed by Drs. Haggard, Pantzer, Vander Veer, Walker, Skeel, Humiston, Morris, and in closing by the essayist.

On motion, the association took a recess until 2: 30 P. M.

Afternoon Session, 2:30 o'clock.

The President in the Chair.

6. "Cervical Fibroids," by Dr. Lewis F. Smead, Toledo, Ohio.

Discussed by Drs. Davis, Hall, Reder, Vander Veer, Dorsett, Zinke, Keefe, Pantzer, Longyear, and in closing by the author of the paper.

7. "Early Diagnosis of Ectopic Gestation, with the Report of Fourteen Cases diagnosed and operated upon previous to the Time of Rupture," by Dr. R. R. Huggins, Pittsburg, Pa.

8. "Interstitial Pregnancy," by Dr. N. Stone Scott, Cleveland, Ohio.

These two papers were discussed together by Drs. Baldwin, Smith, Skeel, Zinke, Pantzer, Bonifield, Wathen, Dorsett, Miller, Moriarta, Porter, Humiston, and the discussion closed by the authors of the papers.

9. "A Case of Multiple Cesarean Section, Both High and Low Operations, with Photographs," by Dr. William H. Humiston, Cleveland, Ohio.

Discussed by Drs. Davis, Zinke, Hall, Smead, and in closing by the essayist.

On motion, the association took a recess until 7:30 P. M.

Evening Session, 7:30 o'clock.

The President in the chair.

10. "Radiographic Study of Motor Phenomena of the Pyloric End of the Stomach and Duodenum with a View to the Early Diagnosis of Carcinoma, Ulcers, and Adhesions in this Region, Illustrated by Lantern Slides and Cinematographic Films," by Dr. Lewis Gregory Cole (by invitation), New York City.

11. "Displacements of the Stomach and Colon, Their Clinical Significance, Diagnostic Features and Surgical Treatment, with Report of Cases Illustrated with Lantern Slides," by Dr. Charles A. L. Reed, Cincinnati, Ohio.

The two papers were discussed jointly by Drs. Morris, Hanes, Frank, Bonifield, and the discussion closed by the essayists.

At the close of the discussion, on motion of Dr. Vander Veer a vote of thanks was extended to Dr. Cole for his able and interesting paper.

12. "A Study of a Pseudohermaphrodite," by Dr. H. S. Crossen, Saint Louis, Missouri.

Discussed by Dr. Miller, and in closing by the essayist.

On motion, the association took a recess until 9 A. M., Wednesday.

SECOND DAY—*September 27, 1911.*

Morning Session.—The association met at 9 A. M., with the President in the Chair.

13. "Drainage: The Essential Element in the Surgery of the Biliary Tract," by Dr. Charles N. Smith, Toledo, Ohio.

Discussed by Drs. Brown, Vander Veer, Pantzer, Reder, Sherrill, Hall, Noble, Sadlier, Porter, Dorsett, Skeel, Bonifield, Keefe, and in closing by the essayist.

14. "In Memoriam—William Warren Potter," by Dr. L. S. McMurtry, Louisville, Kentucky.

15. "An Appreciation," by Dr. Charles A. L. Reed, Cincinnati, Ohio.

16. At this juncture, as there was neither of the Vice-Presidents present, Dr. Charles N. Smith was called to the Chair, and President Hayd delivered his address.

At the conclusion of the President's address, Dr. Vander Veer made some remarks on the life work of Dr. Potter.

On motion, the association took a recess until 2:30 P. M.

Afternoon Session, 2:30 o'clock.

The President in the Chair.

17. "The Obese Abdominal Wall," by Dr. Francis Reder, Saint Louis, Missouri.

Discussed by Drs. Cannaday, Marvel, Bonifield, and Noble, after which the discussion was closed by the essayist.

18. "A Consideration of the factors Entering into the Mortality of Acute Intestinal (Mechanical) Obstruction," by Dr. John Young Brown, Saint Louis, Missouri.

Discussed by Drs. Sherrill, Porter, Kirchner, Wathen, Morris, Dorsett, Walker, White, and in closing by the essayist.

19. "Notes on the Use of Sterilized Animal Membranes in Surgery," by Dr. Robert T. Morris, New York City.

Discussed by Drs. Reder, Crossen, and in closing by the essayist.

On motion, the association took a recess until 9:30 A. M. Thursday.

THIRD DAY—*September 28, 1911.*

The President in the Chair.

20. "In the Relation We bear to Our Patients, What Use shall We make of Our Knowledge of the Evil Effects of Venereal Disease?" by Dr. Albert Vander Veer, Albany, New York.

Discussed by Drs. Reed and Dorsett.

Dr. Dorsett moved that the paper presented by Dr. Vander Veer, clothed in the language it is, be offered to a secular magazine for publication.

Dr. Smith seconded the motion.

Dr. Reed likewise seconded the motion, and expressed the hope that some way might be found to carry it out, but said it was necessary, first, to obtain Dr. Vander Veer's consent and, second, to make an arrangement with Dr. Wells, editor of the *American Journal of Obstetrics and Diseases of Women*, whereby this could be done.

Dr. Vander Veer said it would be proper, if the Fellows of the association felt disposed, to adopt the resolution offered by Dr. Dorsett, and he would see that his contribution went to a paper like Frank Leslie's or Collier's or some other reputable lay magazine.

Dr. Hayd said he felt reasonably certain that with the arrangement he had made with Dr. Brooks H. Wells, Dr. Wells would not object to Dr. Vander Veer's paper being published in any secular journal that Dr. Vander Veer might elect.

DR. DORSETT.—Such statements as have been made in the paper not only come from the pen of Dr. Vander Veer, but they come from this association, because I believe of all associations in this country, there is none upon which devolves more responsibility on this particular question than on this association.

DR. REED.—Would it not be well for Dr. Dorsett to amend his motion so as to make it read that we as an association recommend its publication in a secular journal, with our approval.

DR. DORSETT.—I accept that amendment.

The original motion as amended was put and carried.

The discussion of Dr. Vander Veer's paper was then continued by Dr. Vance, and the discussion closed by Dr. Vander Veer.

21. "Some Observations on Cancer," by Dr. J. Garland Sherrill, Louisville, Kentucky.

Discussed by Dr. Vander Veer, and in closing by the essayist.

22. "In Memoriam—Joseph Price," by Dr. James W. Kennedy, of Philadephia, Pa. (Read by Dr. Walter B. Dorsett, in the absence of the author.)

Dr. A. B. Miller now took the Chair.

23. "In Memoriam—Carlton C. Frederick," by Dr. Herman E. Hayd, Buffalo.

In accordance with custom, the following papers were read by title and ordered published in the Transactions:

1. "Some Factors in Operative Technic and Management Which make for Success or Failure," by Dr. Walter B. Chase, Brooklyn.

2. "A Review of the History of the Iodine Methods of Skin Sterilization with Remarks on the Technic of its Use," by Dr. John E. Cannaday, Charleston, West Virginia.

3. "A Case of Primary Tuboovarian and Secondary Abdominal Pregnancy; Fully Developed Fetus removed after Twelve Months; Recovery," by Dr. W. S. Smith, Baltimore.

4. "Remarks on the Teaching of Obstetrics and Demonstrations with the Aid of Lantern Slides," by Dr. Henry Schwarz, Saint Louis.

5. "Some Points in Connection with Chronic Appendicitis," by Dr. G. K. Dickinson, Jersey City, N. J.

6. "The Cause of Postoperative Neurasthenia based on Experimental Research and Personal Experience," by Dr. George W. Crile, Cleveland.

7. "Radiograph and Specimens with a Short History of a Case of Nephrolithiasis, Nephrectomy on One Side, Nephrotomy on the Other," by Dr. John F. Erdmann, New York.

8. "Sarcoma of the Uterus," by Dr. Charles L. Bonifield, Cincinnati.

9. "Prevention of Shock," by Dr. J. H. Carstens, Detroit.

10. "Advantages of an Antiseptic Hand over an Aseptic One in Midwifery," by Dr. Douglas H. Stewart, New York.

RESOLUTION OF THANKS.

DR. N. STONE SCOTT offered the following resolution:

RESOLVED, That the thanks of the American Association of Obstetricians and Gynecologists be extended to the Committee of Arrangements, to the Seelbach Hotel, to the Pendennis and Country Clubs, and to any others who have been instrumental in making this such a successful meeting, both socially and scientifically.

The resolution was seconded by Dr. Humiston, and unanimously adopted.

INSTALLATION OF OFFICERS.

In the absence of the President-elect, Drs. Smith and Davis were appointed as a committee to escort the First Vice-President, Dr. Louis Frank, to the platform; and Drs. Swope and Sherrill were appointed a committee to conduct the Second Vice-President, Dr. Magnus A. Tate, to the platform.

PRESIDENT HAYD.—Gentlemen: I wish to take this opportunity to thank you for the cooperation that you have given me and for the hearty support which has enabled me to bring to such a successful termination this splendid meeting. Although I am conscious of having done considerable work, which was attended with no little worry and anxiety during the past year, yet this splendid appreciation on your part is a most beautiful compensation, and I am particularly pleased to be able to turn over the association and valuable papers to such a splendid president as we have elected, namely, Dr. Werder, and, in his absence, to those gentlemen who represent him. Again, gentlemen, I thank you for your support. (Applause.)

Dr. Frank was then introduced, and said: Fellows of the Society: In behalf of Dr. Werder, our new President, and the Second Vice-President and myself, we accept this honor and appreciate it very much. I assure you, with the work of this association and the cooperation which will be lent by every member, our transactions next year will be equal to those of previous years. We need work in this association; we need much discussion. One of the good features of this meeting has been the free discussions we have had. They are the discussions of an active society. That is what we want. I thank you. (Applause.)

Dr. Tate, Second Vice-President, was introduced, and said: Mr. President: This association has become very dear to me, and if I can serve you in any capacity whatever, always command me. (Applause.)

Dr. Zinke, the newly-elected secretary, was introduced, and said: Mr. President and Fellows of the Association: I hope you will excuse me from making any prolonged remarks. I have not sought the position of secretary, but in the wisdom of the council and association it was deemed best to elect me secretary for this year. Personally, I feel that some one better fitted for the position than myself could have been found, and all I can do is to give you my solemn pledge that I will fulfil the duties of this office during the coming year with the same devotion that has characterized all of my efforts in this association. I have nothing but the kindliest feeling for all of you, and I hope that before my term expires that each and every one of you may feel, in a slight degree at least, the same toward me that you now feel toward our departed Fellow, Dr. Potter. (Applause.)

Dr. Miller introduced Dr. Vander Veer as one of the prominent

members of the association and as the prime mover in the organization.

DR. VANDER VEER.—I have been here through the entire meeting, and I want to say to you, it has gone along splendidly. We are trying to better our work. I feel grateful that this association has gone on for the number of years it has and has reached such a high plane of professional success. (Applause.)

DR. CHARLES N. SMITH.—Before adjourning, I feel it is the pleasure of the association to show its appreciation of the indefatigable labors of our retiring President, Dr. Hayd, during the past year. Dr. Hayd has done something which has never been before accomplished in the history of this association—namely, he has managed completely and satisfactorily the two offices of the association, President and Secretary, and I feel we should show to him that we appreciate the great work which he has carried out so successfully, and I would suggest that we show our appreciation by a rising vote.

The vote was unanimous.

There being no further business to come before the meeting, on motion of Dr. Miller, the association then adjourned to meet in Toledo, Ohio, the third Tuesday in September, 1912.

WILLIAM WHITFORD, *Secretary pro tem.*

EXECUTIVE SESSIONS.

Tuesday, September 26, 1911.

The President in the Chair.

PRESIDENT HAYD.—The Executive Council recommends that Mr. Whitford, our official stenographer, be appointed Secretary *pro tem.* Is there any objection?

DR. VANDER VEER.—I move that the action of the Executive Council be concurred in.

DR. HUMISTON.—I second the motion. Carried.

On behalf of the Executive Council, the Secretary presented the names of the following candidates for Fellowship: Drs. George R. White, Savannah; James King, Buffalo; Emery Marvel, Atlantic City; Palmer Findley, Omaha; Charles W. Moots, Toledo; Charles A. Stillwagen, Pittsburg; Channing W. Barrett, Chicago; Earl P. Lothrop, Buffalo; Asa B. Davis, New York City.

On motion, the Secretary was instructed to cast the ballot of the association for the election of these gentlemen, which he did, and they were declared duly elected.

PRESIDENT HAYD stated that, owing to the death of Dr. Potter, he had assumed the onerous duty and responsibility of getting out the transactions. This he had done, and the transactions had been expressed to the Fellows.

He also mentioned a personal interview which he had had with Dr. Brooks H. Wells, editor of the *American Journal of Obstetrics and Diseases of Women*, with reference to publishing the transactions of the association in the future in that journal. He had made the arrangement with Dr. Wells, that hereafter he as editor would publish the papers read before the association and discussions therein in full. With this arrangement the association would save two or three hundred dollars, for the reason that it would not have to pay for resetting of type of papers, and there was no good reason why the volume of transactions should not be issued much more promptly than heretofore, and if they were not published in time there would be no one to blame except Dr. Wells. He expressed the hope that this arrangement would meet with the approval of the association.

DR. BALDWIN asked whether, in publishing the transactions, the same sized pages would be used as in the *American Journal of Obstetrics and Diseases of Women*.

PRESIDENT HAYD replied that the same size and form would be used in the transactions as in the journal.

DR. BALDWIN.—If that is the case, I do not see why we should wait until March or April for our volume of transactions. For many years I was chairman of the Printing Committee of the Ohio State Medical Society. We met in June, and I thought I was derelict in my duty if the transactions were not out in September, and we did not have a medical journal in which to publish our transactions. We had more papers than are read before this association, yet the book was issued promptly. If the printing is done in November and December, we ought to have the transactions ready for distribution about thirty days later. It seems to me it would be an unnecessary and unbusinesslike delay if we did not have the transactions by the first of January. I was editor of a medical journal for twenty years, and I know about printing offices and the excuses printers make. They put their work off to a more convenient season, and that convenient season may not come until next summer.

PRESIDENT HAYD.—I can answer you, Dr. Baldwin, in a few words. Dr. Brooks H. Wells did not stipulate any particular month for getting out the transactions. We know that all of our papers and discussions cannot be printed in one issue of the journal, but if all of these papers and discussions can appear in the November and December issues of the journal, I have no hesitation in saying that we can have our volume of transactions in January or February.

On motion, the arrangement for publishing the transactions which President Hayd had made with Dr. Wells was concurred in.

The financial reports of the Secretary and Treasurer were presented, and on motion of Dr. Humiston, seconded by Dr. Longyear, they were referred to an Auditing Committee appointed by the President, consisting of Drs. Keefe and Pantzer.

DR. A. B. MILLER called attention to an amendment to the Constitution which was proposed last year, and which reads:

"*Resolved*, That the Constitution be so amended as to provide for retired members, which shall include those Fellows who have become aged or otherwise invalided and unable to meet the yearly demands of dues. The members of this association shall consist of Ordinary Fellows, Honorary Fellows, Corresponding Fellows, and Senior Fellows."

DR. MCMURTRY stated that there were some members of the association who were in feeble health, who could not attend the meetings, and they did not feel that they should be dropped when they did not attend a certain number of meetings as the Constitution required. In addition to that, some of the men had been unfortunate, but they were loyal to the association. They were interested in its work and felt it was an honor to belong to it, and its interests they had close at heart, and they did not like to be dropped out of it, so that he had offered the resolution to the effect that the association provide for Senior Fellows, as well as the Ordinary Fellows, Honorary Fellows, and Corresponding Fellows, as had been done by the American Surgical Association, so that men who had reached an advanced age, or who were incapacitated by ill-health, or who for various other considerations were not able to attend the meetings, instead of being dropped, can be placed on the list of Senior Fellows, and that they be entitled thereby to the rights of membership and be exempt from the payment of dues.

He said he presented this amendment last year, and it now came up for action.

DR. VANDER VEER.—I would move that this amendment be taken from the table and that it be adopted, and I would like to say a few words in favor of it. What Dr. McMurtry has said is true. He has presented the facts. This matter has come before other associations that are older in organization than ourselves, notably the American Surgical Association, and it has been met in this way. There are men who really are not able to attend faithfully these meetings, and yet they still want to be identified with the association, and the establishment of a roll of Senior Fellows seems to work out very well, and in the American Surgical Association the question has been met satisfactorily. It is nothing more than we should do. By establishing a list of Senior Fellows, these men will continue as members of the association, but they are not required to pay dues. They can attend whenever they please. If they wish to present papers they can do so. They have all the privileges except to participate in the election of officers, they being obliged to attend regularly in order to share in that function. Therefore, I move the adoption of the resolution.

DR. HUMISTON.—I take great pleasure in seconding the motion.

DR. HALL.—I take great pleasure in seconding it, too. Personally I would greatly appreciate the favorable action of the association on this motion, and I hope it will carry. I believe it will do the association good because, according to the old method, these men were somewhat disgruntled and were not friendly toward the association as they otherwise would be, and in this way we will have their friendship and good will, and that is worth a lot to the association, and I certainly most heartily support the motion.

DR. BALDWIN.—The wording of the resolution is not clear. How long must a man be a member of the association before he is eligible to be placed on the list of Senior Fellows?

DR. VANDER VEER.—I do not think there is any limited time.

DR. DORSETT.—It occurs to me, it will be necessary for the President to appoint a committee to amend the By-laws in order to conform to this change. This is simply a statement of facts, and is not an amendment to the By-laws, as it stands now. It is essential to amend the By-laws, so that this will become a law of the association.

DR. HUMISTON.—Does not an amendment to the Constitution carry with it the matter of changes in the By-laws to conform to the Constitution? Our By-laws must be changed

to conform to the Constitution, and in changing the Constitution, should we not change the By-laws to conform with it?

DR. DORSETT.—Not necessarily.

DR. BALDWIN.—The point made is a good one. This does not give the language of the amendment, except in general terms. What we want is to give in definite language the section of the By-laws which is to be amended as to how these men are to become Senior Fellows, whether by vote or otherwise.

DR. A. B. MILLER.—Proper action was taken a year ago regarding this matter, and a resolution was offered to meet the conditions that are being considered.

DR. DORSETT.—Yes, but the Constitution is a declaration of principles, whereas a By-law is a rule of practice, so this is simply a statement. It is not in the Constitution of our association. It is simply a statement recommending that a change be made in our basic principles, and then becomes a principle, and we have to have a law to guide us.

DR. BONIFIELD.—The proper course to pursue is to adopt this resolution, and after that is done a motion should be made that the President appoint a committee to so amend the Constitution and By-laws as to conform with the recommendation set forth in this resolution.

Motion seconded by several.

DR. BALDWIN.—This amendment, if adopted, will take in some men who have dropped out for the reasons stated. I have in mind Dr. Gilliam, who has been a member of the association for many years, one of its Vice-Presidents, and an active contributor to its proceedings. I was much surprised to know that because of ill-health he had resigned his membership. There is no member of the profession who has a warmer spot in his heart for this association than Dr. Gilliam, of Columbus, and I wish it might be possible for him to be put in this list. There are other members doubtless who would like to be included, and this committee should word the amendment in such a way as to include those who have dropped out.

The President then put the motion of Dr. Vander Veer, and declared it adopted.

DR. BONIFIELD.—I now wish to renew my motion, that the President appoint a committee of three to draft an amendment to the Constitution and By-laws as called for in the resolution that has been adopted.

Motion seconded and carried.

THE PRESIDENT.—I will appoint on that committee Drs. Bonifield, Miller and Dorsett.

On motion, the Executive Session then adjourned.

Wednesday, September 27, 1911.

Dr. A. B. Miller in the Chair.

Dr. Hayd stated that at the last meeting of the Executive Council the names of the various applicants were presented for Fellowship, but there was some misunderstanding with reference to the application of Dr. Bainbridge, of New York, in that Dr. Dickinson forgot to send in the application. Dr. Bainbridge was endorsed by Drs. Dickinson and Morris. He stated that he had received Dr. Bainbridge's dues and thesis, and the Executive Council had recommended to the association that favorable action be taken on the application of Dr. Bainbridge.

DR. HUMISTON.—I move that he be elected to Fellowship.

Motion seconded and carried, and Dr. Bainbridge was declared duly elected.

THE PRESIDENT.—We will listen to the report of the committee appointed to amend the Constitution and By-laws.

Dr. Bonifield presented the following report:

Your committee appointed yesterday to revise that portion of the Constitution regulating the membership of this association, begs leave to submit the following: Add the following to Article III, Section 2, so as to read "and Senior Fellows."

Also insert as Section 5, "Senior Fellows shall be nominated by the Executive Council and elected by the association as provided for in the election of Honorary Fellows, and they shall enjoy the same privileges as are accorded Corresponding Fellows."

(Signed) C. L. Bonifield,
A. B. Miller,
Walter B. Dorsett.

THE PRESIDENT.—What disposition do you wish to make of this report?

DR. HUMISTON.—I move its adoption.

DR. WALKER.—I second the motion.

Carried.

DR. HALL.—I would like to ask if this amendment is retro-

active, so that men who have been dropped for various reasons can come in?

DR. A. B. MILLER.—Without looking over the records, my thought in connection with this matter is that these men are obliged, according to the Constitution and By-laws, to make application for their reinstatement. Is that right, Dr. Bonifield?

DR. BONIFIELD.—That is my understanding. Dr. Hall has spoken of this matter before, and personally I am in sympathy with the thought he has in mind.

DR. HALL.—I would like to ask if this matter cannot be left to the discretion of the Secretary and President, or to the Executive Council, to invite certain men to become Senior Fellows. I have in mind one or two men who are interested in the work of the association, and who would like to be Senior Fellows, yet I know them well enough to know they would not ask to become Senior Fellows, neither would you if placed in their circumstances. They did good work for the association when they were able physically and financially to do so, and because they have not been able to keep up their dues and have not been able physically to attend, they have been dropped for nonpayment of dues. I think it is only our duty, and it should be a pleasure, to invite these men to become Senior Fellows. This can be done by the Secretary. If necessary, I will make a motion to that effect.

DR. SMITH.—I second that motion, and I wish to endorse every word Dr. Hall has uttered. We do not want to humiliate any of these men who are now ordinary Fellows, and who may of necessity have to become Senior Fellows, nor do we wish to humiliate any of the men who have been Active Fellows with us. Let the secretary invite them to come to us rather than let them ask us to be taken back into the fold.

DR. A. B. MILLER.—I believe this matter can be taken care of without any further discussion. If it is the wish of the committee we can accept what has been said by Dr. Hall and incorporate it as a part of the report.

The members of the Committee on Amendments to the Constitution and By-laws having agreed to accept the motion of Dr. Hall, as a part of its report, the motion was then put and carried, and the report declared adopted.

DR. HAYD.—Last year we elected Professor De Ott, of St. Petersburg, Russia, an Honorary Member, and I have received a beautiful letter from him thanking the association

for the honor conferred upon him. If there is no objection, it will be spread upon the minutes.

No objection being raised, it was so ordered.

Dr. Pantzer read the report of the Auditing Committee, as follows:

LOUISVILLE, September 27, 1911.

We, the undersigned, having been duly appointed by the President an Auditing Committee, hereby certify that we have examined the foregoing accounts of Dr. X. O. Werder, Treasurer of the American Association of Obstetricians and Gynecologists, the same being for the twenty-fourth fiscal year, beginning September 21, 1910, and ending September 20, 1911, that we have compared the same with the vouchers thereof and find them correct in all particulars, excepting small disbursements made by the Secretary and acknowledged by the Treasurer, for which there are no vouchers presented, leaving a balance in the hands of the Treasurer of $73.06, and for which is presented a check payable to Dr. Herman E. Hayd, President.

(Signed) Hugo O. Pantzer,
J. W. Keefe.

On motion, the report was accepted.

At this juncture, President Hayd resumed the chair and the association proceeded with the election of officers.

The following officers were nominated and declared duly elected: President, Dr. X. O. Werder, Pittsburg, Pa.; First Vice-President, Dr. Louis Frank, Louisville, Ky.; Second Vice-President, Dr. Magnus A. Tate, Cincinnati, Ohio; Secretary, Dr. E. Gustav Zinke, Cincinnati, Ohio; Treasurer, Dr. Herman E. Hayd, Buffalo, New York; Members of the Executive Council, Dr. Charles L. Bonifield, Cincinnati, Ohio, and Dr. Herman E. Hayd, Buffalo, New York.

Dr. Charles N. Smith, on behalf of the six active Fellows of the association from Ohio, and of the two hundred members of the most active Academy of Medicine in the State of Ohio, said he took great pleasure in inviting the association to hold its next annual meeting in the City of Toledo.

Drs. Humiston and Hall heartily supported the motion.

Dr. Frank moved that the invitation be made unanimous, and that the Secretary be instructed to cast the unanimous ballot of the association in favor of Toledo.

Motion duly seconded.

The Secretary then cast the ballot of the Association as instructed, and Toledo was declared to be the next place of meeting.

On motion, the time of holding the meeting was fixed as the third Tuesday, September 17, 18 and 19, 1912.

As there was no other business to come before the meeting, the Executive Session then adjourned *sine die*.

WILLIAM WHITFORD, *Secretary pro tem.*

PAPERS

READ AT THE

TWENTY-FOURTH ANNUAL MEETING

OF THE

AMERICAN ASSOCIATION

OF

OBSTETRICIANS AND GYNECOLOGISTS

HELD AT

THE SEELBACH

LOUISVILLE, KENTUCKY

SEPTEMBER 26, 27, AND 28, 1911

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THE PRESIDENT'S ADDRESS.

BY

HERMAN E. HAYD, M. D., M. R. C. S., Eng.,
Buffalo, N. Y.

ANOTHER year has been added to the life of our Association and a new President has been elected and has occupied the honored chair of this Society. Permit me to thank you for this signal mark of your esteem, appreciation and good-will, for coming as it did unexpectedly and unsought for, I was overwhelmed by its honors, its privileges and its responsibilities. At first, I could not realize what it meant to be promoted from an humble member in your ranks to the position of your presiding officer, and especially so, when I thought of the men who had preceded me, and of the work and valuable contributions they had made to the science, the art, and the practice of obstetrics, gynecology and abdominal surgery.

I came to you a young associate; I brought to you each year my best, and by reason of my annual association with you and the light and influence of your work and teachings, each year I have been able to bring something better. But what is of still more importance to all of us is that I brought to my work and my usefulness in my community, that which can only be gotten by intimate association with such a special Society as ours. We heard for the first time every year epoch-making papers, we learned of new methods and new modes of practice, which when adopted revolutionized our previous efforts. We undertook operations with confidence which we had previously thought impossible. We saved life and mitigated pain and suffering. We have made useful to society men and women so wrecked by disease and septic processes, that death, with its surcease and comfort, would have been a welcome messenger. Our diagnostic abilities and acumen were enriched by the landmarks and pathognomonic symptoms, which you established for us, and, with the richness and fulness of time and the many varied experiences which have come from personal contact with morbid phenomena, we can, in all truthfulness, say, that modern surgery, based

upon an early and correct diagnosis, is the product of men engaged in special fields of work, and who are proud of their attachment and membership to special societies.

The evolution, growth and development of this Society is interesting. It had its humble beginning in Buffalo twenty-four years ago, and since then it has met in annual convention in many of the largest cities of our country. Its aims and purposes were noble and laudatory, its power and usefulness were at once felt, and as a result, the Association grew quickly, and had enrolled early in its membership many of the most distinguished obstetricians, gynecologists and surgeons in our country, and particularly those from the South and West. During these past twenty-four years it has zealously and untiringly carried on its good work, and its transactions now number twenty-three handsome volumes, filled with the latest and best thought and procedure in the special field which our name represents and stands for. In this evolution, there have been developed men whose fame has spread all over this land, and whose work and writings are known in every country where scientific medicine and surgery are practiced, and their papers, observations and experiences have been translated into every language where an intelligent and humane people have sought to bring relief, comfort and happiness to their suffering and afflicted. For this unique and coveted position which our Society has attained some of our members deserve especial praise and thanks, because the fruits of their labors and the products of their great and creative brains came to us first at our annual meetings for criticism, endorsement, for personal trial, commendation and elaboration, and thence were transmitted and disseminated to the four quarters of the globe, and no matter how great has been their deserved glory or rich their emoluments, these past masters of our craft must always remain the honest debtors of this Society, because here they found the opportunity to make public their work; here they were stimulated and encouraged in their best endeavors, and from here their reputations and influence were broadened and enhanced by our practical and personal application of their methods and teachings. We fostered and encouraged their individuality; we developed and judiciously tempered their enthusiasms; we subdued and softened their strong personalities in debate and scientific discussion—earnest and sometimes even acrimonious, yet always bound to them by the warmest ties of friendship and brotherly love.

Here their spurs were first won, and from here, they have enjoyed state and national preferment, having honorably filled the presidential chairs in broader and more representative medical bodies, such as our various State Societies and the American Medical Association.

The policy of our Society, so far as its membership is concerned, has always been broad and thoroughly democratic. Men were accepted into our membership because they occupied honorable positions in their profession in the community in which they lived, and because they were doing advanced and efficient work in our special field of labor. Some were young and had their reputations to make, but were in possession of those talents and faculties, which in time must add to the material development of our guild. These young men, by reason of their tireless energy and restless ambition to accomplish and succeed, brought their perplexing problems to you for solution, and by your papers—and still more through your discussions—they found means and methods to meet their difficulties, and these in turn created and developed higher ideals and nobler standards for their future work and government of their cases. In common with you all, they soon learned, that nature was a coy and jealous maiden, and that in order to find out her secrets and know her hiding places, they must ever be her constant and most ardent votaries. They consulted and studied the books and the best literature of the leading authorities of the world. They traveled into foreign countries and visited the large clinics of England and Continental Europe, France, Germany, Switzerland, Belgium, Austria and Italy, and brought the work, methods and ideas of those great masters back with them, and thus from the very inception of our Association a broad catholicity has permeated all our work, thought and scientific effort, and medical Chauvinism—that most dangerous, narrow and bigoted form of idolatry—has found no place with us. Of course, individual effort is always appreciated and recognized, and we have loved to enthuse and glorify our own beacon lights, as Murphy, Deaver, Morris, McMurtry, Reid and our lamented Price and a host of other brilliant and original workers among us, because by so doing specialization has been implemented and developed and the laws of heterogeneity have progressed in some subjects seemingly to a finality.

We regret with the transitions of time and the ever changing mutations of matter, that death has taken from our ranks some of

our best, most lovable and most distinguished members, and although we shall forever mourn over these inevitable vicissitudes—still we must accept them as the unalterable and established law of an all-wise and omniscient Creator.

During the past year, death has laid his hands too heavily upon us and has taken from us six of our active members: Montgomery Linville, George E. Goodfellow, Maning Simons, William Warren Potter, Carlton C. Frederick and Joseph Price. Suitable memorials have been prepared by their life-long friends and associates, and will appear in our annual transactions.

Some of our men have resigned for reasons best known to themselves, and some have left us and taken up their abode with other societies, with more loss, I believe, to themselves than to us. It is, however, to be regretted that an established institution as ours is, should lose some of its inherent cohesiveness by these unfortunate changes and experiences. Men who come to us—raw recruits—and accept our privileges and grow in strength and usefulness by reason of our opportunities, should for all time give their best to us, and build up and perpetuate this body, that has always striven to grow in scientific usefulness by honest work and honorable methods.

It is an exceedingly difficult matter in the short time assigned me to bring before you, what has been accomplished in the last quarter of a century in obstetrics and gynecology, and of necessity, if not alone by continuity of tissue, at all events by contiguity of structure, pelvic and abdominal surgery. The advances that have been made in these departments of the healing art, with the advent of Listerism and antisepsis, and, later bacteriology and asepsis, are familiar to all of you.

The practice of obstetrics is an ancient one, and the mechanism of delivery was thoroughly understood by our old masters and teachers, and their books—like those on descriptive anatomy—may still be our safe guides, so far as the mechanism of labor is concerned, the recognition of the various positions of the child, the methods to be employed for their correction and safe delivery. But, hand in hand with modern gynecology, has come modern surgical obstetrics with its triumphs in Cesarean section, and the recognized importance of preventive measures, so as to secure an easy puerperium and rapid convalescence, free from mortality and future morbidity, by giving immediate attention to the careful repair of all lacerations of the perineum, cervix and vaginal outlet. A new impulse was given the practice of obstet-

rics, when our immortal Holmes first advanced his ideas on the contagiousness of puerperal fever and its prevention, and the whole subject was revolutionized when Semmelweis first put into actual demonstration these truths and robbed the lying-in chamber of child-bed fever and all its shocking horrors, as was so beautifully demonstrated by Dr. Henry Schwarz of St. Louis at our Syracuse meeting.

Very little has been added to the classical descriptions of Nagele on the positions of the child and the various deformities of the pelvis, and few modern text-books have described so beautifully the mechanism of labor, as did Murphy of the Dublin Lying-in Hospital.

The indications for the modern high Cesarean operation, and that splendid, safe and easily executed vaginal Cesarean section, or the Duhrssen Vaginal Schnitt, are so thoroughly dealt with in our transactions that I deem it sufficient to simply mention them; but, I am full of a deep sense of obligation when I say, that asepsis, modern Cesarean section and the Duhrssen Schnitt are the crowning achievements of modern midwifery. The various operations upon the pelvis are associated with so many possible, immediate and remote, complications and consequences, that I feel constrained to venture the opinion, that we must still keep our judgments *in statuo quo*, until more experience and time have demonstrated the safety of these procedures.

The practice of gynecology and pelvic surgery, on the other hand, is a modern one, and no nation has contributed more to the elucidation of this subject than the United States of America. The various malpositions of the uterus were understood for a century or more, and their attempt at correction was made by pessaries and other mechanical devices. Tumors were diagnosticated—solid and liquid—with rare precision. Minute and delicate attempts to differentiate between hematocele and hematoma were made, and pages of literature were sent out on pari and perimetritis, on pelvic peritonitis and pelvic cellulitis, while their pathology—that foundation for all constructive treatment—was entirely misunderstood. Thanks to the labors of Goupil and Bernitz for the pathology of infection and its consequences; and when once understood, from that time scientific gynecology took its initiative, and since then—in common with all other branches of surgery, whether limited to the nose, throat, eye, ear or genitourinary tract—the laws of infection have been understood, its progress by continuity of tissue or

contiguity of structure established, and then proper modes of treatment suggested to either limit its extension by palliative and curative measures, or totally eradicate the diseased focus and its products by surgical interference.

During the past quarter of a century many great surgical questions and pathological problems have been settled, and with the solution of these subjects each and every one of us have contributed something, of greater or less value, but the sum total product has been simply enormous. When Ephraim McDowell of Kentucky, did his first ovariotomy in 1809, he established the possibility and opened the portals for all kinds of subsequent abdominal surgery. It is not only pleasant, but seemly, for us to pause here for a few moments and reverently pay our respects to the memory of that great pioneer, who in a small, remote, rural village conceived the idea, that an ovarian tumor could be successfully removed, and then had the indomitable force, courage and strength to undertake this task. For that act of heroism and skill, a fitting monument has been erected by the grateful people of this state, but in every state in this Union, and in every city, town and hamlet in this great country and throughout the whole civilized world for eons, there shall ring out from the hearts of womankind a benediction more glorious than can ever be expressed in any material way.

We are also proud of the fact that in America the first successful hysterectomy for fibroid tumor was performed by Kimball on September 1, 1853. Burnham had operated successfully in June, 1853, but under a false diagnosis, having opened the abdomen for an ovarian tumor and, finding a fibroid uterus, removed it successfully. The operation they did was practically the operation we are advocating to-day, excepting that they left the lower end of the abdominal wound open to permit the escape of the ong silk threads which were left attached to the stump of the tumor. With the accession of anesthesia, together with the increased knowledge in general surgery, the aseptic treatment of wounds and the employment of safe and absorbable ligature materials, refinements of technic have resulted so that the crude operation of Kimball is now developed into one of scientific precision and exactitude. The surprisingly low mortality attached to our modern hysterectomy in the hands of any capable surgeon has resulted in so many successful operations, and the acquisition of so many beautiful specimens that the opportunities for study of this important subject have been

very great, so that our knowledge is nearly complete of their history, life and growth, of the various degenerations which they undergo and the complications which attend them; of their etiology and symptomatology and the various methods for their safe and easy removal. At first—apart from the dangers of sepsis and those accidents which are possible when operating in the vicinity of the viscera—hemorrhage was the chief anxiety of the surgeon when the stump was dropped back into the peritoneal cavity. Various devices were employed to meet this danger. Elastic ligatures were placed tight around the neck of the raw cervix and left *in situ* and dropped back into the abdominal cavity, and finally the stump was pulled forward and in various ways was fastened to the lower end ot the abdominal wound and treated extraperitoneally. Koerberle then devised his serre neud, and gave a new impulse to abdominal hysterectomy and his work was soon supplemented and popularized by the splendid results of many of his followers, and in this country by none more brilliantly than our own Joseph Price. In 1889 Stimson of New York put the final touch on this brilliant procedure and gave a new impetus to the whole field of uterine surgery, when he demonstrated that by tying off the uterine and ovarian arteries in the broad ligament, complete hemostasis could be accomplished, and the wisdom and propriety of this procedure has been borne out by the thousands of operations which have been performed, with all kinds of difficulties and complications and with a surprisingly low mortality. I have had seventy-three supravaginal amputations with three deaths; one preventable and the result of inexperience in my early series and reported in our transactions, but a very difficult operation; and the others perhaps necessarily fatal ones, in women frail and weak from long and exhausting hemorrhages, who died from shock eight and eleven hours after operations of comparative simplicity. Supravaginal amputation is the operation of choice when the cervix is healthy and free from tears and suspicious ulceration, but when unhealthy or there is the slightest reason to suspect possible malignancy of the body of the uterus, a pan hysterectomy should be performed; whether commenced below and completed above or executed *in toto*, from above, are matters of individual aptitude and experience. Myomectomy has a defined place in the surgery of fibroid tumors of the uterus, but each operator, with the light of his individual experience and previous successes, best knows when it is indicated.

Vaginal hysterectomy for small tumors and malignant growths, for prolapsed uterus and ovaries and certain pus cases which can with ease and safety be attacked from below, is successfully practised by all of us.

The conservative treatment of the uterus, tubes and ovaries is a big and complex problem, and will always require the keenest judgment, founded upon a large and varied experience, to be successful in their proper management, and all thoughtful operators will broaden or narrow that field, according to their individual successes.

The subject of the treatment of displacements of the uterus is definite and established. The place for the pessary and vaginal tampon is recognized. The application of the Alexander operation for uncomplicated retrodisplaced uteri has been thoroughly discussed in this Society, and its position satisfactorily settled, in the minds of those men who know how and when to properly perform it. The various intraperitoneal operations, the reduplication or folding of the round ligaments upon themselves, or their anterior transplantation to the abdominal wall, ventral suspension and even ventral fixation all have a definite place in modern and advanced gynecology, and the thoughtful student and surgeon who will reason from cause to effect and study and analyze the results of his work must always claim a certain degree of confidence and satisfaction in their proper employment, but oftentimes restricted fields of usefulness. In my intraperitoneal operation for the displacements of the uterus, I have been using where there is no pus, celloidin, that German linen thread product, with the greatest satisfaction, and I have had no subsequent troubles from its continued presence in the tissues. I believe that our failures with the reduplication of the round ligaments operation were owing to the fact that any kind of catgut, even if chromicized or kangaroo tendon, often dissolves prematurely in some persons with very active peritoneal digestion, and thus the shortened doubled-up ligament unfolds itself again, and the intraperitoneal pressure pushes the uterus backward, perhaps even into the hollow of the sacrum.

The plastic operations upon the cervix and perineum have been wonderfully successful and satisfactory, and, although they have often been done badly and in cases without any symptoms calling for their employment, that does not lessen their possible usefulness. The operations upon the anterior wall of the vagina have not, in my hands, been as permanently

fixed as upon the posterior and perineum. I read a paper before this society, which is published in volume 18 of our proceedings, upon the treatment of prolapsus uteri, in which I described my operation on the perineum and for which I claimed almost universal success; and with years of further experience and careful examination of my previous cases, I am as enthusiastic as I was then. These beautiful and permanent results I am sure are due to the fact that the mechanism in the production of these lacerations is fully considered, and with the aid of buried sutures tied by the assistant, with my finger in the rectum delineating each structure from above downward and bringing each together in perfect apposition to a similar structure. Would that I could say with the same enthusiasm and confidence that my operations upon the anterior wall had been equally successful, because in this class of work I have had many failures, and I am sure it is due to the fact that one cannot use the urethra as we can the rectum. If I could put my finger into the urethral canal and delineate structures and bring them together with precision, as I can on the posterior wall, our successes would be equally flattering. I am interested in that operation described by White of Savannah, because I believe he has in view the proper mechanics in the production of cystocele, and his operation, if successful as he claims it is, is due to the fact that the white line of the pelvic fascia along the descending rami of the pubes and ischium is thoroughly exposed, and the torn bladder and adjacent fascia and structures are pulled back to it and permanently fastened on to it. My experience with his operation is not great enough to bring anything more before you at this time, but I hope to report later.

Ovariotomy, either for cystic or solid tumors of the ovary, has reached perfection in its technical management, and other than the dangers associated with the anesthetic should be performed without any mortality. Intraligamentary cysts and solid growths, if properly appreciated when the abdomen is opened and the layers of the broad ligament split along the upper border, can usually be delivered without any difficulty; but when inflammation and perhaps suppuration has set in, either in these cysts or those of the ovary with their resultant adhesions, we often have a most dangerous and serious undertaking.

Diverticulitis I have seen, but I have never operated for this condition, and, when acute, a diagnosis will usually be made of appendicitis or some other allied affection, and operation under-

taken and this condition dealt with upon general surgical principles.

Acute thrombosis and embolism of the mesentery I have seen once, and it is a terrible affection and is usually fatal because it is impossible to make an early diagnosis, and, in common with many other fulminating inflammations, as acute pancreatitis, it seems at present to be beyond the pale of successful surgery.

Extra-uterine pregnancy, a subject full of uncertainty and not generally understood when this Society was first inaugurated, has—through the labors of our members and men attached to similar organizations—reached the highest degree of perfection, and its successful management is a crowning tribute to specialized effort.

Appendicitis.—That insidious and still ever-present monster, who in the small hours of the night creeps in and strikes down like an assassin the best and most worthy of our citizens, and robs us mercilessly of our tenderest offspring, and annually slays its tens of thousands, and will continue to do so until we succeed in overcoming the incompetence and ignorant conservatism of the general practitioner, who will not recognize and accept the scientific teachings and unassailable logic of modern surgery to operate just as soon as a positive diagnosis can be made. In no branch of the healing art has definite knowledge been gained so rapidly, and the observations and conclusions of the previous year so corroborated by the increased experiences of the succeeding one. This Association can well felicitate itself for the work it has done in this great subject, for in no domain of medicine can the world point with greater pride and express its gratitude more feelingly than it can to Murphy, Morris, Deaver and the late Joseph Price; not forgetting the brilliant achievements of McBurney, the lamented Bull and many others.

Far be it from my desire in this paper to be unduly complimentary or extravagantly prolix in my adulation of our men in this Society, but I cannot let this occasion pass by without expressing my belief and firm conviction that the sum total of all of Murphy's great and many achievements are as nothing compared to the life-saving principles and possibilities which he gave us for the treatment of acute general peritonitis. For none "should his brow be more richly covered with the wreath of fame."

The diseases of the liver and pancreas have been assiduously studied by us, and the results of timely and well-directed surgery are most satisfactory and encouraging.

The surgery of the stomach has also engaged our efforts, but so far has not yielded, in my judgment, results which will stand the crucial criticism of the many other surgical undertakings we have championed and labored for.

Diseases of the bladder, ureters and pelvis of the kidney have received the closest study and investigation by the modern specialist, and I am sure I am voicing the sentiments of most of you when I say this class of work can only be carried on successfully by men specially trained and who have the time and desire to specialize in this careful and patient line of surgery. I am amazed when I look over the literature of this and other kindred subjects to see what that versatile and many-sided man, that genius of pelvic and abdominal surgery, Howard Kelly, has contributed and also accomplished in this particular line of work.

Cancer—that human scourge, like the great white plague—continues to fasten its tentacles so deep that all human effort has failed to fathom its dark recesses, and surgery when applied, only in the very earliest stages has accomplished anything creditable. However, I live in the hope, in common with all of you, that the restless spirit of experiment and investigation which characterizes the workers in our many well equipped and richly endowed laboratories will some day, and perhaps in the near future, give us an antibody or serum which will effectually rid suffering humanity of these terrible blights.

In conjunction with our progress have come disappointments, punishments and failures; sometimes deserved, but often unexpected and a cruel retribution for earnest effort. Hernia, obstruction of the bowels, post-operative adhesions and fistula are among the most common.

Hernia is usually a preventable accident, and is due to carelessness in not properly coaptating like structures together and holding them sufficiently long until organization of tissue takes place between them. Good, firm union is interfered with by infection, and therefore pus cases, with drainage tubes or gauze wicks, invite rupture. Carelessness in technic, bruising and unnecessary crushing of tissue, dirt or infection from the surgeon's hands, or badly prepared catgut are prime factors in the production of pus and the prevention of perfect union. The employment of gloves in all cases where they can be conveniently used is of prime importance, and I endeavor in all of my work to wear them, and of course insist on my assistants and nurses always wearing

them. If, however, there develop, in the course of the operation, unexpected difficulties and dangers I sometimes remove them, believing that better, more rapid and safer work can be done with ungloved hands. Anything which contributes to shorten the period of the operation and the anesthesia reduces the shock to the patient, so in desperately sick cases, speed consistent with good surgery is all important.

In primary operations for simple rupture or post-operative hernias—in fact, in all clean cases—suppuration should never occur, and when it does the surgeon must hold himself responsible for it; and, if he always labors with that surgical axiom, cleanliness, before him, he will see very few hernias following his work.

The Bassini operation for inguinal hernia has given me the greatest satisfaction, and the fascia overlapping method of Blake in ventral hernias, where it can be done, is a fine idea. The Mayo operation for large umbilical hernia is the most beautiful surgical procedure with which I am acquainted, and it makes a strong abdominal wall, without trying to bring together the widely separated recti muscles, which is absolutely impossible in many of these cases of extreme diastasis.

In a paper on Umbilical Rupture which I read in Toronto in 1909, I reported eleven cases of which one died on the fifth day of pneumonia and intestinal toxemia. Four were suffering from strangulation and had been vomiting from twenty-four to thirty-six hours previous to operation. Since then I have operated nine more sucessfully. Three were strangulated and in one I removed seven inches of the small bowel for a small gangrenous area and I did an end to end anastomosis without button.

The conclusions of that paper, published in the *International Journal of Surgery*, December, 1909, I shall append in this address:

1. That umbilical herniæ, except in children, are not cured by trusses or mechanical supports.

2. They should be operated on early, when adhesions and technical difficulties are not great. Adherent omentum is the rule, and obstruction and strangulation are very common.

3. They are found in fat women who have usually borne a number of children, so that the abdominal wall is loose and flaccid and falls over the pubes and even the front of the thighs. Moreover, the recti muscles are separated for several inches and cannot be approximated in large hernia.

4. It is the only operation which increases the transverse circumference of the belly at the umbilicus, and therefore increases the size of the peritoneal cavity, so that all the hernial contents can be replaced and accommodated without danger of pulmonary edema and early lung complications from pressure on the diaphragm.

5. It is anatomically correct and mechanically ideal.

6. It is practically without mortality unless associated with acute complications, and should not be as dangerous and difficult in its performance as is the operation for large inguinal hernia. It should have a lower mortality and less relapses.

7. It is easy and simple in its performance, and can be rapidly executed after its technic and various stages are understood.

In my later cases I have combined with the Mayo operation, a very free dissection of the big, loose abdominal wall, after the suggestion of Howard Kelly in that cosmetic operation he described in the 1910, March, number of *Surgery, Gynecology and Obstetrics*. In one case I commenced my incision on each side, going across the front of the abdomen from the anterior axillary line two inches above the umbilicus, and then extending it downward toward the pubes, so as to take out an elliptical piece of skin and fat, which at its deepest diameter measured eight inches in width, and then freed the upper and lower flaps and approximated them together after the hernial sac was removed and the opening was closed by overlapping flap method. The result was beautiful, and my patient was so delighted with her slim and attenuated figure that she strutted before me with such pride and personal satisfaction as if she were a modern Venus de Milo. I have had no deaths and no returns or failures with the Mayo operation, but one must be sure of his technique to get results with this undertaking.

Post-operative adhesions are the serious drawback to all abdominal operations, as they happen often in simple, clean cases, and unfortunately we cannot tell when they are going to occur. All raw surfaces should be covered over, and drainage and gauze should be used only when there is a very definite indication for their employment. The omentum should be pulled nicely in place, and a quick and clean operation performed. Dusting powders and foreign membranes I have employed and abandoned as I saw no good from them.

No doubt, I am voicing the sentiments of all of you, when I

say that post-operative adhesions and their sequella must be looked upon as the bête noir of modern surgery, and until they can be prevented, surgery must be subjected to a deserving rebuke, because, no matter how painstaking and honest the surgeon may be in the selection of his cases and in the performances of his various operative undertakings, these unexpected adhesions develop, and until we can guarantee that a simple exploratory incision, or an interval appendix case, or an intraperitoneal round ligament shortening will not be followed by perhaps dangerous adhesions of omentum and bowel to the line of incision, we must undertake with dread and misgivings any procedure that involves the opening of the peritoneal cavity, unless life or important function is seriously jeopardized by recognizable pathological lesions. There is practically no mortality incident to modern surgery when skilfully and scientifically executed, but these painful complications with their associated danger and distress, their future suffering and disability, should make us more conservative and more willing to often advise that our trusting patients "better bear the ills they have than fly to those they know not of." And I, for one, gladly welcome the deserved criticism of a long-suffering and abused public, and deprecate against this surgical furore which finds an immediate panacea for all human suffering in the surgeon's knife.

Obstruction of the bowels has been so often discussed in the Society's proceedings, I shall say nothing on that subject to-day.

Fistula and sinuses are very rare in the practice of those men who use absorbable ligature materials, and when they do occur there is usually some tubercular process, either in the bowel or viscera to which they lead, or into which they empty.

Unsightly scars and the development of keloid in wounds that healed kindly by primary union has been a very unhappy complication in a small per cent. of my work, and unfortunately they have occurred in intelligent women, who have judged the skill of my surgery in proportion to the unsightliness of their scars. I have sewed wounds together by buried sutures. I have united them by the fewest number of interrupted through-and-through sutures.. I have removed the sutures early and have applied lead and mercury adhesive plaster over the line of incision, but in some upon whom I operated a second time the successive operation was as bad as the first one. I now only resort to the *x*-ray for their dissipation, and I am

pleased to be able to report through Dr. Grover Wende some signal and satisfactory resolutions and nearly perfect cures. However, I am anxious to add something to my work or method of operating which will prevent their formation, and I trust some of you will help me.

The many neuroses, neuropathic tendencies and manifestations which are seen accompanying our modern civilization, and for the relief of which so many operations have been needlessly performed and which have brought, perhaps justly, severe criticism and a merited opprobrium to our art, are being conscientiously studied by the masters in physiological chemistry. They are bringing forth to us through the rôle of the purin body and the results of careless food and improper dietetics in the production of toxines and diatheses, fundamental and basic truths which, when properly appreciated and studied by us, will eliminate from our work many of its painful disappointments. The endogenous purin elimination and its chemistry is too complicated for the busy and practical surgeon to get deeply interested in, but the importance of the exogenous content in our food must at once receive our intelligent support and appreciation. Rich purin foods, excesses in the use of alcohol, tea and coffee, tobacco, want of exercise, imperfect oxidation and faulty elimination are filling our waiting rooms with querulous men and women, with backaches and headaches, with tender and painful stigmata over the ovaries and along the ureters, over the appendix and gall-bladder, in the pit of the stomach, and these are often only functional expressions of an overworked, overclogged and irritated organism, and for the relief of which nothing could be so disastrous as surgery.

In our brilliant achievements of the past twenty-four years we must not forget in our enthusiasms for the new, the work of the great men of the past whose names seem to be but shadowy forms of their once pristine power and greatness, "and are dragged out only on occasions of this character, when history is notating the onward tides and steps of human progress." McDowell, to whom we have already fittingly referred, grows no less resplendent in glory when coupled with the names of Marion Sims and his patient work with vesico- and recto-vaginal fistula, and Emmet, that great master of plastic surgery. These are three immortal names, a trinity of resplendent stars which America has contributed to pelvic surgery.

The splendid results of modern medicine, and especially

surgery and midwifery, have been in a very great measure accomplished through the efforts and assistance of the trained nurse, and no address would be complete before a body of men whose successful work is so dependent upon these conscientious and devoted women, unless it were illuminated by a kind and appreciative reference to their services. Their position in the sick room has grown to be one of great responsibility, but too often it is made difficult, trying and unjust. The doctor receives and accepts all the honors and glory, when he has successfully carried through to health and happiness a very dangerously sick patient, while in reality these honors should go to the nurse; that kind and devoted woman, who gives encouragement and brings sunshine when hope is gone, through the wearying weeks and months of slow but sure dissolution; who, during those long hours of labor by day and ceaseless vigil by night, is ever trying to keep aglow that flickering spark which feebly oscillates 'twixt life and a blessed eternity. For these noble and priceless services, and by which some of our greatest successes are accomplished, we must be ever ready to give her an appreciative compensation.

The founders of our Society are to be congratulated upon the wonderful growth and success of this Association, and upon the high character of this year's papers and the splendid discussions they have provoked, and for which I especially thank you. They are the index of our usefulness and a glowing tribute to the character of our men, and a most powerful omen for our continued growth, development and solidarity.

A FURTHER PROTEST AGAINST THE ROUTINE USE OF PURGATIVES.

BY

EDWIN WALKER, M. D.,

Evansville, Indiana.

At the meeting of this Association in 1906 I presented a paper on the "Abuse of Purgatives." I pointed out the well-known fact that purgatives are used by most people constantly and habitually. You will find few homes without some laxative medicine which is employed without the advice of a physician. Patent medicines, as well as many well-known laxative remedies, are habitually used by a large proportion of our population, ignorantly and injuriously. The popular faith in this class of drugs is akin to a superstition. This practice causes many troubles which are more or less serious, and in some organic diseases of the bowels masks the condition, and the temporary relief they give only postpones the time for thorough investigation and appropriate treatment.

This widespread use of purgatives is partly due to the patent medicine advertisements, but very much more to the bad precept and example of the medical profession. The patient gets a purgative practically always when he consults his physician; too often after a careless, perfunctory examination at which no definite diagnosis is made. Can we wonder that it is the first resort for any discomfort or illness, or at the popular belief that an occasional purge is "healthy"?

The family physician, the specialist, and even the surgeon, who effect contempt for drugs by their excessive use of purgatives are responsible for this condition. They are prescribed at beginning of any treatment and when the patient is dismissed the laxative "to be used when needed" is rarely omitted, while the purge before surgical operations is nearly universal.

For two years before I prepared my first paper, I had carefully noted in all histories whether purgatives were used and to what extent and the effects of their withdrawal. In that time I had not purged patients before surgical operations, except in rare

cases, and I spoke with reserve because of my limited experience. Now I have seven years of such experience and feel much more confident that my claims were fully warranted. In these seven years I have not purged 1 per cent. of my operative cases but have relied on a simply digestible diet with enemas to empty the bowels. My patients have done better, they have had fewer complications, and have been more comfortable and especially have had less pain and tympany. Gas pains are rare while they are the rule when purgatives are given.

I want once more to call your attention to the habitual use of cathartics which is an opprobium to the profession and to urge more careful diagnosis and the use of these, as well as all other drugs, when indicated only.

We are trying by education to deter the public from the injurious use of patent medicines, let us also by every means teach them that routine use of all drugs is bad, and by good work of our own, show them how much better it is to properly diagnose their condition and intelligently order their lives and thus cure disease instead of relying on drugs.

I have on my history cards carefully noted whether the patient used purgatives. Many of my cases come purely for local or surgical troubles and otherwise are not ill, and many of the others have no disease of the digestive tract. More than 90 per cent. use purgatives to some extent, varying from two or three doses daily to three or four a year. In nearly all cases the remedy was first prescribed by a physician. Of this whole number of purgative habitues, 95 per cent. were relieved of their supposed constipation as soon as they discontinued their medicine and were regular in their habits and had a suitable diet; even the latter was unnecessary for many. In other words, these people did not really have any digestive disease, nor were even really constipated, but purgatives, careless, irregular habits and a diet, leaving too little to pass off, were the causes of their trouble. The small per cent. which really had some morbid condition of the *prima via* had been purged just the same and to their injury. Organic diseases of the stomach and bowels are not curable by cathartics, most of them are aggravated by them and the temporary relief in others only postpones more necessary treatment or operation.

Colitis, fecal impaction, adhesions, pressure from other diseased organs, strictures, tumors, lacerations of the pelvic floor make up most of the other 5 per cent.

In the first class, purgatives are superfluous and harmful, in the last they are valueless, excepting in a very small number of cases. They may be of temporary benefit but in none a permanent cure.

Is it not time that we were carefully weighing the necessity of the purge at the beginning of our treatment, and giving it only when required and with care to instruct our patient on dismissal that the laxatives are not to be continuously used? That if diet and regular habits do not relieve, some other treatment must be instituted?

It is almost a universal practice of surgeons in and out of hospitals to purge all patients before any surgical operations. Routine practices of all kinds are bad and a moment's thought will convince anyone that this practice is unnecessary in a large proportion of cases. Is it given to empty the intestines, for removing any retained fecal matter or any deleterious substances which may be present. It is wise to take so sweeping an action when in a large majority there is no evidence that any of these conditions exist? Suppose there has been some coprostasis from careless habits; if there is retention of fecal matter, it is in the colon. It is rare, indeed, to find much in the small intestines except in emergency operations, soon after a full meal. Unless there is gross disease of the small intestines it moves its fluid contents regularly and in about the same time into the colon, for the muscular movements of the small gut are almost as regular as those of the heart. We have not, therefore, in ordinary cases any stasis or retention of matter in the small bowel; if there is trouble it is from disease which must be diagnosed by a definite clinical history, and after such diagnosis is made the purgative will probably play a minor rôle in its treatment. In other words, the presence of retained secretions or toxins in the small intestine is not to be assumed without definite symptoms and does not exist even in a small minority of those who require surgical operations. If there is fecal retention it is in the colon; if this is in the form of fecal impaction a single purge will not dislodge it. The bowel contents are rendered more fluid and germ activity is increased; this condition is less favorable for any surgical operation on the intestines or elsewhere, also unfavorable for recuperation after the operation. In very weak patients this is often quite important.

If there is only a small amount of fecal retention an enema will more effectually dislodge it. With patients who have gross

lesions, as strictures or tumors, causing partial obstruction, it may in some instances be a great advantage to remove fecal accumulation by both purgatives and enemas, but in these conditions several days will be required and a single purge will not effect it.

The proportion, therefore, of cases in which there is fecal accumulation, from my observation, must be very small.

The laxative after the operation is more often indicated; this, however, is due to the quietude in bed, and the small quantity of food taken for the first few days. Still the purge after a surgical operation should not be habitually given. It is not necessary for the bowels to move for three or four days in a large majority of cases and for these the enema will suffice. Many can wait still longer without discomfort and disadvantage. They do as well, except a few who will have accumulation in the rectum which, while not serious, is quite uncomfortable; for this reason alone it is better to move the bowels by enemas the third or fourth day and if this fails, give a laxative. Patients who are able to take a liberal diet rarely require this.

Infection following an operation is not cured by a purge. Local peritonitis is better treated by Ochsner's method, which strives to restrain peristalsis, the purgative increases it and tends rather to spread infection.

There are indications for purgatives and their extensive use is evidence enough that they have a place in our therapy. Their usefulness is confined to a comparatively limited field, and as we become more accurate in our study of disease, this field will be still farther curtailed.

It should be clearly understood also that even in those diseases in which purgatives are indicated they are not curative, but only temporary aids; the real cure must come from other treatment, surgical or medical.

I shall not attempt to give all indications but will mention the chief ones; acute indigestion, or where irritating or toxic substances are in the digestive tract, and acute diarrhea, a dose of castor oil or other laxative will hasten their removal. Fecal accumulation and impaction may require a course of laxatives for a short period.

There are a few cases of constipation which resist hygienic and dietetic treatment. We attribute the trouble to "atony," which is hard to define, and the word merely covers our present ignorance. Their number is very small and I am satisfied these

will be still fewer when we study them more deeply. Some organic defect will, I believe, be found at the bottom of most of them.

In some central nervous diseases, they may be useful by their revulsive effect. In diseases of the heart, bloodvessels, and kidneys they sometimes aid in relieving high pressure or elementary toxic substances. I hesitate to speak of their use in liver disorders, so little is definitely known, while "torpid liver," biliousness and similar terms are used so loosely that they are of little meaning, since they are more often applied to conditions which have nothing to do with the liver or its functions. Most of these troubles are due to diseases such as malaria, tuberculosis, septic infections, or diseases of the digestive organs which could be definitely diagnosed if the case was carefully studied.

There are doubtless other indications, but when all is said we will be forced back to the original statement, that they are secondary in importance to other treatment and rarely if ever curative.

It is not necessary to go deeply into this argument; anyone who will reflect will be convinced that in light of our knowledge, our present practice is without defense. With a better knowledge of disease the vague symptomatic indications for purgatives have long since been shown to be fallacious, still we continue their routine use. I am sorry to add that our literature gives us ample authority. It may seem bold to challenge what seems to be so generally supported by the best of authorities. A careful study of our recent works on diseases of the alimentary canal will reveal a general protest against the habitual use of purgatives, but most writers in my judgment weaken its force by giving assent to their use without emphasizing the fact that they are very rarely needed. It seems to me that most of them are unable to break away from past errors. Books are too often a record of error as well as progress. We must after all rely on our own study and observation.

The conclusions here presented are based on the study of the literature and teaching on this subject in the last few years, and on the observation of several thousand recorded cases in which purgatives were habitually taken and the results after they were withdrawn. My experience has been so clear cut and decisive that it has led me to form conclusions that purgatives are indicated in only a small part of the ailments we treat, and that used

as they are now by the profession they are productive of infinitely more harm than good.

The routine purge before operations is indefensible, it is a relic of ignorant and barbarous medicine which should have long since been abandoned. It is contrary to logic, reason, and common sense; its continuance is a positive disgrace to surgery.

DISCUSSION.

DR. E. GUSTAV ZINKE, Cincinnati.—Dr. Walker's papers, written within the last few years on this subject, have interested me very much because I am a victim of this complaint, and I have tried to correct it in various ways, Dr. Walker's method included. The doctor is, to a great extent, unquestionably right. In some things he is wrong.

Years ago it was said that a distinguished practitioner of Berlin died leaving his family penniless. But he had written a book. He had been a very successful practitioner, but never revealed the secret of his success to any one. After his death this book was to be sold at auction, unopened. It brought the expected high price. When the book was opened it was found that with the exception of one single page, it was absolutely empty. On this one page were found these words: "Keep the head cool, the feet warm, the anus open, and the doctor has naught from you to hope." But how to keep the anus open regularly is the problem. It is a very important question, after all.

During my trip abroad this spring I became intimately acquainted with the captain and officers of the steamer and among the topics which came up for conversation was that of constipation. I was amazed that my practice to keep the bowels open was quite familiar to them and they practised it daily. It consisted of taking a scant teaspoonful of Epsom salts every morning before breakfast. This would act naturally and satisfactorily in from fifteen to twenty minutes after breakfast. This practice, however, must be associated with a mixed diet, solid food, and exercise to keep the tone of the musculature of the colon in good condition. Proper diet and exercise, with a little saline every morning before breakfast, will answer in the vast majority of cases.

DR. H. W. LONGYEAR, Detroit.—I have enjoyed the doctor's paper very much, and I think his protest, in general, is warranted, as there is too great an inclination on the part of members of the medical profession, as well as with the laity, to give cathartics. However, I believe that the purgative still has its place and will be used beneficially as long as we have intestinal toxemia to treat, but we should differentiate carefully, and not give them indiscriminately without adequate diagnosis. There is one class of cases in which the protest is certainly warranted, and that is in

enteroptosis, where the administration of cathartics is extremely harmful. There is nothing more injurious to the colon than the habit of prescribing cathartics in such cases without making careful diagnosis. If you have a colon which is angulated, and dropped down into the pelvis, and you give patients having that trouble cathartics, you are doing them a vast amount of harm. You are whipping the colon into an increasing action, causing spastic contraction and increase of distention and angulation. It is like whipping a tired horse. You will get a little response from your whip, but the animal is injured. So it is with the colon. If you are constantly whipping it up with cathartics, you make it worse and worse. You increase the colitis with the attendant pain, abdominal tenderness, mucous stools, etc., and it is exceedingly bad practice, so that in this respect I am certainly in accord with the author of the paper.

DR. WILLIAM H. HUMISTON, Cleveland.—The subject of this paper is one in which we are all interested. A great many of us have been guilty of prescribing purgatives when we should not have done so. We should distinguish between a purgative and a laxative. A purgative has a harsh action always, while a laxative does not. I use tonic laxatives a great deal in treating my patients for, as a rule, they all suffer from constipation. One of the first conditions I attempt to attain is a daily regular movement of the bowels. I start with a gelatin coated pill, containing aloin, bellad, strychnine and cascara, *every night* at bedtime for a week or ten days, then three-fourth of one pill is sufficient; this daily dose is kept reducing by one-fourth every ten days until one-fourth of one pill is taken which then gives as much effect as the whole pill did at the start.

In many of the patients a retro-displaced uterus is to be restored to normal position and maintained there, which is a large factor in overcoming constipation. Also hemorrhoids should be removed.

In preparing my patients for abdominal operations I administer an ounce of castor oil twenty-four hours previous to operation, and a high enema two hours before the anesthesia is begun. With this preparation, and a careful anesthetist to give ether by the drop method, vomiting is a rare occurrence.

THE PRESIDENT.—We have with us this morning a distinguished authority on this subject, and I am sure the association would be delighted to hear from him. I present to you Dr. Joseph M. Mathews, of Louisville.

DR. JOSEPH M. MATHEWS, Louisville.—This is a very interesting subject to me. It must be that I see an entirely different class of people from Dr. Walker. Perhaps the people in Indiana are not so constipated as they are here in Kentucky, but I speak for a great army of suffering humanity. I believe that six-tenths of the people are constipated. If that is true, what are you going to do for them, if you do not unload the bowels? Is Dr. Walker violently opposed to a dose of salts? It struck me

when the doctor was speaking, what harm does a purgative do, or, we will say with Dr. Humiston, what harm can a laxative do? What harm can it do to give it two days before an operation to unload the bowel of toxins, of fecal matters? We know that everybody has fecal matter in the colon, if not in the small bowel, and all you have to do to assure yourself that that is true is to take a purgative and find out how much more fecal matter you pass after the administration of the purgative than when you did not. Coming to my office for perhaps every day in the week for many years have been patients who are prefectly willing to go under the knife, and for what? For constipation. They are not suffering from any acute disease so far as we can see; they are not suffering from any marked pathological conditions, but they are willing to submit to anything that you tell them to do. When you tell a woman that in the morning at precisely five minutes to nine, not nine, but five minutes to nine, she is to go to stool, that she is to live on prunes, etc., and drink a great deal of water, take a certain amount of exercise, do you suppose that she will heed that advice? How many patients do that for the relief of constipation? Dr. Walker's experience has been absolutely different from mine. Such advice does not relieve in my practice.

Now, there is constipation and constipation, and therefore I take this position, that when a patient comes to you as a gynecologist and complains of constipation, and she is compelled every night to take from two to five pills to move her bowels, something must be done to afford that patient relief. I recall the case of a girl, twenty-one years of age, who had to take from six to eight or ten pills in order to get movements of the bowels. What are you going to do for this class of women? Take a woman who comes into your office for the removal of an abdominal tumor. Naturally, you would put her in the hospital until you found out what was the matter with her. Dr. Longyear hit the nail on the head when he said it is wrong to give the class of patients he mentioned cathartics, but how do you know it is that class of people. If you will study their cases in the hospital, they are prefectly willing to pay the money for it; they are perfectly willing to do anything you tell them to. They are willing to undergo Mr. Lane's operation for the relief of constipation. That being the case, it is not ridiculous to say to those women, go out to the hospital until I find out what is the matter with you. There are many pathological conditions that require surgical operations to relieve them. All of you will admit that there is pathology in the abdomen connected with the uterus, ovaries, or tubes, that may require removal before the patient is relieved of constipation. You operate for the removal of a tumor and the patient has the constipation just the same.

About a year ago I visited Guys' Hospital, London, England, and there saw Mr. Mummery and Mr. Lane operate for the removal of the colon for constipation. I found I had a wrong

idea with regard to the operation which these men perform. I asked some questions about this operation because I did not see the necessity of subjecting a young girl, twenty-one years age, to the removal of her colon for constipation. Constipation is a serious thing. You cannot tell me that these toxins confined in the body for weeks and months and even years do not do the general condition of the patient harm, for they certainly do. Therefore, the daily administration of a laxative that Dr. Humiston spoke of is a good thing. Why not? The bowel is the sewer of the body, and why not wash it out, and what harm does it do to wash it out? You cannot simply prescribe a purgative and leave these patients go. They require as careful watching as a case of amebic dysentery. They will not be relieved, and you cannot relieve them by prescribing simply a purgative. Many of them have pathological conditions, and in many of them there is an atonic condition, whatever that may mean. Peristalsis is impaired and you must excite it, but it will take a long time to overcome the constipation from which some of these patients suffer, but when you do the patients will bless you.

Coming back to the paper of Dr. Walker, should we or should we not give a purgative before operating? For a great many years I have given purgatives to patients two or three days before operating on them to empty the bowels. I have given crab-orchard salts, as it beats all other salts to pieces, and it will get there when Epsom salts will not do so. Sometimes it is surprising the amount of fecal matter a patient will pass. If it is surprising, is it not better to have that fecal matter in the chamber than in the body of the patient when you operate? I cannot see that a purgative does any harm. If Dr. Walker will show me where two or three days before operation a single dose of salts or an aperient will do harm, I will concede the point. I grant you that there are some special cases where it would do harm, but considering the great amount of surgery that is done, abdominal and otherwise, I do not see that any harm can come from unloading large masses of fecal matter with a purgative. I believe in the use of purgatives, but I believe more in the use of aperients. I believe constipation is a serious trouble, and that it not only takes a day, but often weeks to find out what is the cause of constipation, and therefore I conclude that these patients should be treated on a par with any other patients. In many instances their condition is found to be surgical, and oftentimes you are warranted with Mr. Lane and Mr. Mummery in removing the colon.

DR. HUGO O. PANTZER, Indianapolis, Ind.—Constipation in my judgment is one of the most pernicious and intractable troubles that besets the human family. I would not denounce as roundly the usefulness of purgatives as does Dr. Walker, though I think he has much evidence to argue against the indiscriminative and prolonged use of purgatives. I rise mainly to mention what to my view is a common and disastrous erring—namely,

to assume that a single bowel movement for each twenty-four hours is all-sufficient. To the extent where this one daily movement is a difficult passage of costive feces this one movement is radically wrong. Why? There is no organ in the body that absorbs moisture with greater avidity than does the rectum, the stomach not excepted. A dry, hard stool means that the moisture and other fecal ingredients have been absorbed by the lymphatics. This spells intestinal auto-intoxication. If there is anything my observation has taught me it is that a low specific gravity of the urine and small percentage of urea are in close etiologic relationship with rectal constipation. Comparative zoologic physiology should teach us that several bowel movements daily is normal. Take the animal, the cow in the field, or the pig in its sty, or the bear in Yellowstone Park, while the animal is taking in food by the mouth it is losing its refuse at the other end of the intestinal tract. In other words, the lower animal heeds the promptings of nature. It discharges from the bowel whenever the peristaltic waves, invariably engendered by the occurrence of stomach digestion, prompt it to do so. The average human does not heed these peristaltic promptings though it can be claimed these are equally in evidence in the human as in the lower animal. The inconvenience it commonly is for the human to go to the closet as often as such prompting occurs is the cause why this is disregarded. This inconvenience, and not the need of nature, has formulated the rule of most sacred observance, namely that one movement from the bowels daily is and shall be sufficient. As a consequent of this erroneous rule supported by medical edict, the vast majority of humans are chronic rectal constipates. Foul breath, dulled minds, sluggish muscles prevail. The overburdened eliminating organs break down prematurely. Early sclerosis of the arteries, kidneys, liver, skin; premature senility, and even death, are the immediate consequences of such vice of ruling and habit.

DR. CHARLES L. BONIFIELD, Cincinnati.—When Dr. Zinke began to tell us about the sea captain, I thought he was going to quote the words of the late James T Whitacre, who, in his lectures on constipation, said one time he knew a sea captain who said that when he closed the hatches of his ship, he also closed his hatches of his bowels and only opened them when he reached port on the other side. Few human beings can do that without harm. It is necessary for the majority of people to have at least one evacuation of the bowels every twenty-four hours, and most people would be better off if they had more frequent evacuations. The author of the paper tells us how prevalent it is for the laity to prescribe laxatives for themselves. They use laxatives for the reason that they feel better after a free bowel movement. I am inclined to think that a widespread custom that exists for years is usually founded on some truth. The beginning a heavy meal with soup and ending with cheese for instance is no doubt based on sound physiological principals. I have not succeeded very

well in relieving many of these patients by changing their diet, but I have cured many of them by an operation which Dr. Mathews does much oftener than I—namely, an operation for the removal of hemorrhoids. A great many patients are constipated because the movement of the bowels is attended with more or less pain, and on account of this discomfort they put off going to stool as long as possible.

Dr. Zinke's method of taking a small dose of salts in the morning is certainly harmless but it does not cure constipation.

Dr. Walker spoke of not emptying the bowels before operation. In this I cannot agree with him. In the first place, I find that it is necessary, sometimes in cases of emergency, to do an abdominal operation without emptying the bowel. In such cases I find it difficult to pack the intestines out of the way during the operation. In the second place, we have a great reservoir filled with fecal matter, with germs of all sorts, and personally I would rather have them out. Under certain conditions these germs may or can migrate through the intestinal canal and give rise to infection with the colon bacillus.

There is one other condition I wish to speak of where the value of purgatives comes in, and that is in acute inflammatory conditions of the pelvis and elsewhere. I am just now suffering from a slight hoarseness, and have trouble with my nose and throat. I used to go to the nose and throat specialist and I invariable found that the first thing he did was to give me a dose of calomel and a dose of salts and wash out my nose. This was an after throught, but the main thing was to given an active purge. Just so in inflammatory conditions of the pelvis, I know of nothing except the prolonged use of hot douches that has so much tendency to deplete the congested pelvic organs as a free calomel purge, followed by a saline cathartic.

Dr. James F. Baldwin, Columbus.—A writer in Philadelphia, a number of years ago, published a book on diseases of women, in which he considered the subject of constipation, and in a very graphic way he gave as one of the causes of constipation in women, the fact that in the majority of cases in the country the privy was at a considerable distance from the house; the woman in going back and forth was subject to the gaze of the neighbors and passers-by; the privy was built of old lumber after the house was completed; the door was off; or hung by one hinge, and the wind blew through the cracks, and rain or snow drifted in; the odor was abominable, and there was a box of corn-cobs in the corner. This he gave as one of the reasons why women suffer from constipation.

It is said that "man works from sun to sun, but woman's work is never done." A man goes to his work regularly, and he can readily arrange for a certain time to go to stool; but a woman must wait until she has washed the dishes, or attended to her baking in the oven, so that the desire passes off, and she becomes "a constipated animal with the backache."

I do not treat constipation, I am glad to say, but when patients come to me with constipation as a marked symptom I send them to a professional friend who makes diseases of the alimentary canal a specialty. He examines the stomach and alimentary canal in general, studies the stools, gives enemas, douches, etc., and if, after a few weeks or months, he finds he cannot cure them, I take them in hand and make a modification of the Lane operation; that is, I switch the ileum from the beginning of the colon to the sigmoid, throwing it off from one side to the other as a man throws a switch. I have had no deaths, no morbidity, and the operation has given me in these cases excellent results. The side-tracked colon remains, but is empty and as harmless as a nonpregnant uterus.

For a great many years I have been in the habit of giving patients as they leave the hospital, if they need a laxative, a little slip of paper prepared by my stenographer. This slip directs the patient to get a pound of Rochelle salts and a bottle of extract of ginger; of the salts she is to take a teaspoonful or two, with a few drops of the ginger, in a tumblerful of cold water as soon as she gets out of bed in the morning. She is directed to diminish the amount of salts as rapidly as possible until she takes a mere pinch or none at all, but she is to take the tumblerful of cold water on rising, and as Dr. Mathews has suggested, I insist on the importance of absolute regularity in going to stool, so that the woman may have the same opportunity for regular bowel movements as does her husband.

DR. WALKER (closing).—I had intended to make this my last paper, but from what has been said I see I shall have to prepare one more on this subject.

My object in writing this paper was not to advance arguments against the use of purgatives, because I did that in my previous papers. My object in preparing this paper wat to protest against the habitual use of purgatives, where a physician does not make a diagnosis. The strongest endorsement I have received has come from the remarks of Dr. Mathews who has pointed out that we have to study cases of constipation carefully in order to make a diagnosis. Constipation is only a symptom, and we have to make this before we can give purgatives intelligently. It is absurd in my judgment to assume that there is a lot of fecal matter in everybody's bowels because in fact there is not. I have opened the abdomens of a thousand patients since I have quit the use of purgatives, and I do not find the intestines filled with fecal matter. The idea of a surgeon claiming that every patient, whether he has a sore throat or any other condition, needs a purgative, is absolutely absurd, and if you will study your cases you will find most of them can be absolutely relieved in some other manner. I believe that the cases from which I have drawn conclusions are entirely different from those which Dr. Mathews meets. He has a larger number of patients who present themselves with serious lesions that require a more thorough study.

If you cannot relieve a patient by a purgative, you should go to work and study the cause of the trouble, and in the practice of the ordinary practitioner, the one who is dealing as a rule with less serious lesion will find that 90 per cent. of his cases will get well if he corrects the diet and habits. I am speaking now of those cases where I have done it. I have withdrawn purgatives in most of these cases with beneficial results. I have had patients who have been constipated for years, and as soon as the purgatives were withdrawn and the diet regulated a cure was brought about. That would be insufficient in cases in which there is obstruction or chronic colitis. In this class the Lane operation might be necessary. I want to emphasize this point: do not send these patients home after simply prescribing a purgative.

Dr. Baldwin spoke of giving his patients salts. I believe he should leave out the salts and impress upon his patients the necessity of correcting their habits, and that of itself will bring about a cure in many instances. We do not appreciate the point as we should that constipation is a symptom, and not a disease. I grant you, there are some cases in which I cannot make a diagnosis; we call some of them atony, which means we do not know the pathology; some of these require laxatives, but if we will study our cases more closely, the number will become very much less, and the idea that every patient who is going to have an ingrowing toe-nail removed or a tooth extracted or any other operation needs a purgative, or that nine-tenths of the people are constipated, is ridiculous.

THE TREATMENT OF SLIDING HERNIA.

BY

WALTER C. G. KIRCHNER, M. D.,

St. Louis, Mo.

(With illustrations.)

DURING the past eight years, I have observed and have operated on some 500 cases of hernia, and while a great variety of cases and conditions were met with, my attention was particularly called to a comparatively rare form, the so-called sliding hernia. In many books in which the subject of hernia is treated, there is no allusion to the form known as sliding hernia, and even treatises on the subject often merely allude to the occurrence of sliding hernia without remarking especially on the treatment. Herniæ of the sliding type are difficult and at times impossible to reduce and, owing to the nature of the hernia, the surgical treatment has more frequently than in other instances been followed by recurrences. It is on this account that I began to study the treatment of this class of hernia in particular.

The first case of sliding hernia which I treated by the method subsequently to be described was in October, 1904, the patient, an old man, presenting himself after three unsuccessful attempts at repair of hernia of sigmoid were made. I saw the patient six years later and there was no recurrence, in the meantime having operated on him for an inguinal hernia on the right side. Since then, while in the service of the City Hospital, as assistant and as surgeon-in-charge, I have encountered several cases, so that in all there are fifteen cases of sliding hernia of the cecum and sigmoid which were successfully operated on by the special method of treatment of bowel and hernial sac. The steps of the operation are applicable to all cases of sliding hernia except the old and extremely large ones occasionally met with, in which nothing short of resection of bowel will permit the closing of the hernial opening.

A sliding hernia is one in which a fixed portion of bowel, the cecum or sigmoid, has descended through the hernial opening into a hernial pouch, in which case the descended portion of bowel is not entirely within the sac, only the anterior and lateral por-

tions being covered by peritoneum. The posterior or mesenteric portion of the bowel is adherent to the tissue over which it has descended, the sac, therefore, while it may contain omentum, small bowel, or other abdominal viscera, being incomplete. Care must be taken not to confuse sliding hernia with simple hernia in which the sac has become adherent to bowel, for in the latter instance the sac in its formation is always complete, and its ligation or closure at the ring after reduction is always possible.

Herniæ are either congenital or acquired, and there are many speculations as to the exact manner in which they are produced. Those occurring in the young are most probably of congenital origin and are easily explained if we bear in mind the researches of Murray(1) and of Russell(2) who have shown that in many instances the sac in the femoral as well as in the inguinal variety is performed.

Many of these cases are associated with undescended testicle, hydrocele, and abnormal development of the abdominal wall, which conditions serve to strengthen the theory of congenital origin. Even in the adult where I have had occasion to operate shortly after the sudden occurrence of inguinal hernia, I have found a sac which probably was preformed, and in a second case a hernia occurred on the right side for the first time, while the man lay in bed after operation for hernia on the left side. At the second operation a thin, well defined sac was found. I have also encountered at operation, hernial sac preceded by a closed empty sac and in another instance the hernia was preceded by hydrocele of the cord. The cases of multiple hernia are probably also of congenital origin.

Congenital defects and pouches in the abdominal wall and congenital deficiencies in the attachment of muscles are all important factors. Ferguson(3) believes that the abnormal or deficient attachment of the internal oblique to Poupart's ligament is a potent cause in the formation of hernia. In many instances there is a considerable quantity of fat in the ring which lessens the resistance of the wall and invites a hernia.

While in many cases there may be no doubt as to the existence of preformed pouches, still I do not believe that this condition maintains in all cases. With increased intraabdominal pressure, the peritoneum, owing to its elasticity, is capable of forming pouches or sacs at the weakened point of the abdominal wall, and the sac enlarging, takes a direction along the lines of least resistance. This sac formation I have observed in a case of true

diaphragmatic hernia of traumatic origin and in interstitial hernia. With a pouch once formed, the dilation process may be similar in effect to the dilatation of the os uteri by the bag of waters. This process of dilatation will explain the position of the sac in interstitial hernia and hernia with multilocular sac. Wherever the abdominal wall is weakened by deficiencies, by the interposition of fat, by scars, by insufficient protection of the normal openings, aside from congenital consideration, the tendency to the formation of peritoneal pouches is increased and hernia is likely to result.

Sliding hernia of the cecum or sigmoid is possible in those cases in which displacement of organs has taken place, the attachment of the bowel being abnormally low, and the subperitoneal tissue being loose and elastic. The advancing hernial sac, where the cecum or sigmoid is in the proximity of the inguinal or femoral ring, seems to draw the bowel after it, causing the cecum or sigmoid to descend. The larger the ring or defect, the more easily does the bowel slide from its position in the abdomen into the sac.

The diagnosis of sliding hernia as distinguished from simple hernia, may be extremely difficult or impossible. These herniæ as a rule cannot be entirely reduced, although they are associated frequently with an enlarged hernial ring which explains why strangulation is not so apt to occur. The bowel, owing to its descent and fixed position, does not remain in the abdomen and a truss when worn causes pain. When the hernia is of long standing, it is apt to be complicated by adhesions and should be differentiated from incarcerated hernia or simple hernia with adhesions.

Sliding hernia is encountered most frequently in adults, and Coley(4) states that it rarely occurs under the age of fourteen. In children the sac of irreducible herniæ usually contains the cecum or sigmoid. Either the inguinal or femoral openings may be the recipient of a sliding hernia of the sigmoid or of the cecum. For the proper surgical treatment, it is important to know with what type of hernia we are dealing, so that the proper technic may be applied.

It has been observed that in acquired and in the postoperative herniæ, the tendency to hernia formation is increased if the bowel is adherent over weakened areas of the abdominal wall. When the bowel is movable, and the peritoneum is smooth and free from pouches or pockets and is properly supported by the underlying structure, then the danger of hernia is greatly lessened.

In a sliding hernia, we have adherent bowel in relation to a weakened abdominal wall at one of the natural openings or rings, and the manner in which the hernia is found is sufficiently uniform to permit of a typical method of treatment. By freeing the bowel of the sliding hernia and investing it with peritoneum borrowed from the sac, complete replacement of the bowel into the peritoneal cavity is made possible and opportunity is then offered for converting the incomplete sac into a normal sac which will permit the neck to be ligated high up beyond the ring. The

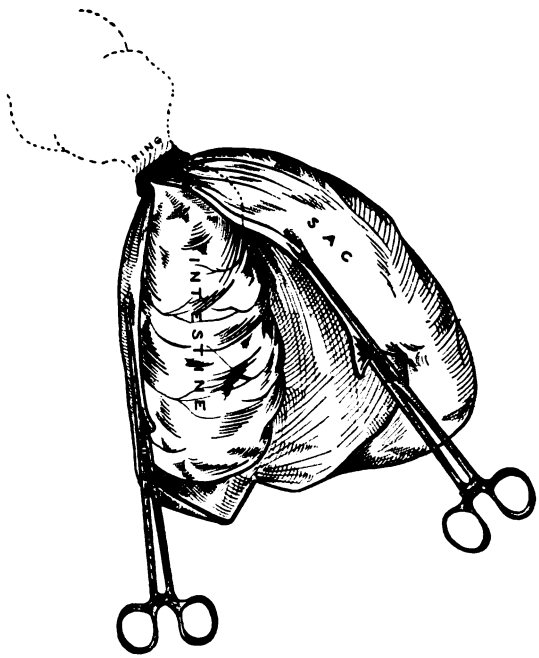

FIG. 1.—Sac opened and incised along lateral portion of adherent bowel.

customary operation for simple hernia may then be performed.

The principal steps of the operation are—to convert immovable or adherent bowel into movable bowel; to make complete reduction possible; to construct the partial or incomplete sac into a normal or complete sac; to permit ligation of the sac high up beyond the ring; to enable the complete repair of the hernia to be made by one of the typical and accepted operations for hernia.

The technic of the operation is as follows:

The usual incision for hernia is made and the sac is exposed,

care being taken not to injure bladder or bowel. In the sliding type of hernia, the sac does not cover the bowel posteriorly so that the lumen may be entered without encountering the layer of the sac.

The sac being opened at its lower portion, the contents are returned to the abdominal cavity and in certain cases where the ring is small, the Trendelenburg position will be found to facili-

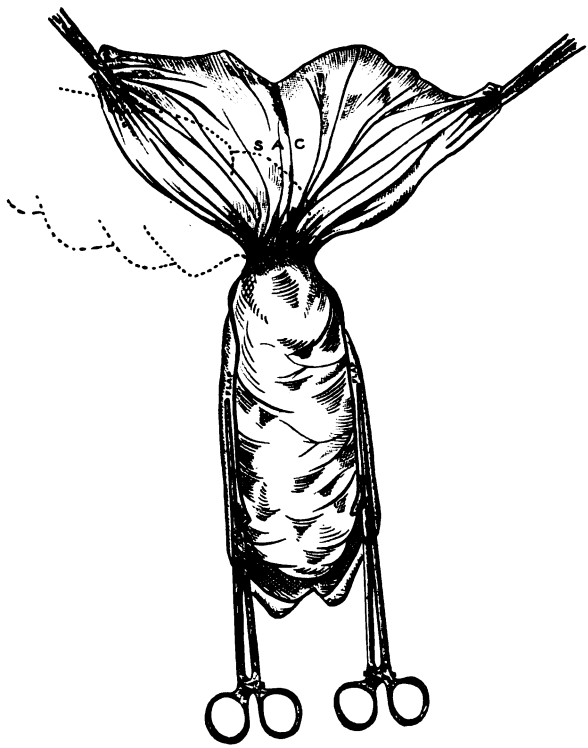

FIG. 2.—Sac severed from bowel leaving lateral flaps.

tate reduction. In the sliding hernia, it will be noticed that the sac is incomplete, that while the anterior and lateral surfaces of the bowel are free, the posterior portion is adherent.

In hernia of the sliding type, the sac having been opened, and made free of adhesions, a clamp grasping the sac is introduced parallel with the line of attachment of the bowel and adjusted at a short distance from the reflection of the sac over the bowel. A second clamp is placed on the sac above and parallel to the first

clamp, and the sac is incised between the clamps, the line of incision running well up to or beyond the ring (Fig. 1).

The opposite side of the bowel is treated in a similar manner and the severed sac is lifted away from the bowel. By this procedure a flap of the sac is left on either side of the bowel (Fig. 2). The bowel is then grasped and pulled upward as if to produce trac-

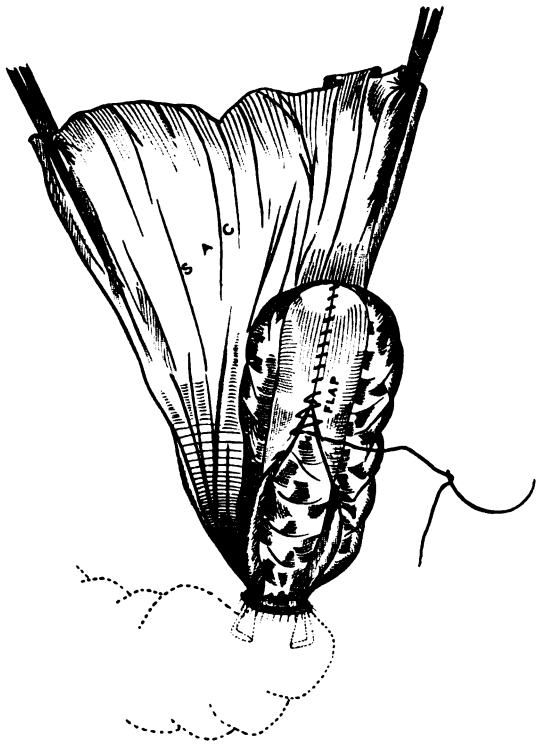

FIG. 3.—Bowel loosened and denuded area of bowel covered over by suturing of sac flaps.

tion on the mesentery and by means of careful dissection the bowel is made free from the underlying structures.

The bowel is freed well beyond the ring, care having been taken not to injure the bloodvessels which lie in a sort of newly formed mesentery. Each lateral flap of sac, where it meets the incision of the sac, is cut transversely in an inward direction toward the bowel, thus enabling it to be turned backward over the denuded portion of bowel. The clamps having been removed, and the flaps having been turned back and their cut margins approxi-

mated, they are sewed with the Lembert or Cushing suture so as to cover the denuded area of bowel or newly formed mesentery. The loosened bowel is thus entirely invested with peritoneum. (Fig. 3). Care should be taken not to have the sac flaps too narrow, so that when approximated, angulation and constriction of the bowel may be avoided.

The bowel, having thus been made freely movable to a point

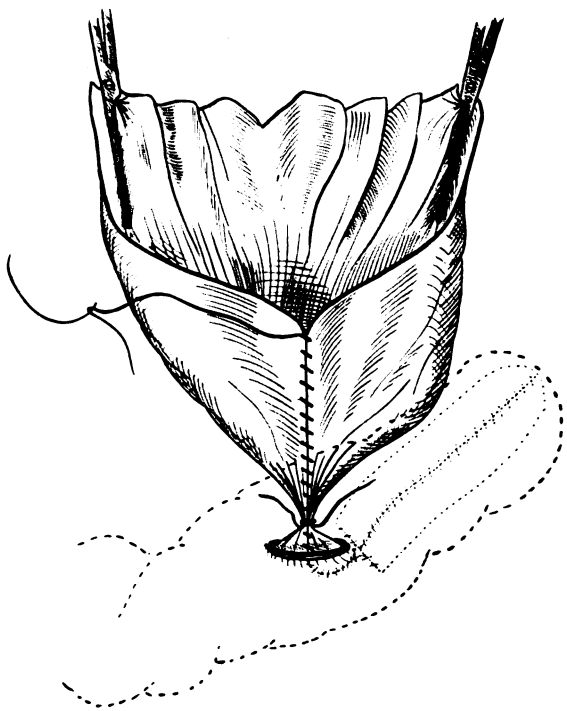

FIG. 4.—Bowel has been returned to the abdominal cavity and the sac, having been partially reconstructed, has been ligated at the neck.

beyond the ring, is returned to the abdominal cavity. The next step consists in the reconstruction of the sac by suture of the cut margins (Fig. 4). Obviously it is necessary to restore only the neck portion of the sac so that ligation or suture of same may be properly made.

Between the bowel and the place near the ring, where the cut margins of the sac are approximated, there is left a triangular space which should also be closed in with peritoneum. The sac having been partially restored, the finger is inserted through

the neck into the abdomen to ascertain if the bowel is free and the peritoneum smooth and free from pouches.

The sac may then be ligated or sutured and the operation of hernia completed by any of the approved methods. In inguinal hernia, care should be taken to completely and securely close the ring, to strengthen the inguinal canal, and to properly suture the various structures to Poupart's ligament so that a strong and resisting wall from within out is formed.

In very large herniæ it may be impossible to return the bowel to the abdominal cavity, in which case, if the patient's condition warrants, it may be necessary to resort to resection. In cases in which the hernia is very large, it is well to reduce the hernia and to have the patient remain in bed or wear a truss, so that the abdomen may become accustomed to the increased intra-abdominal pressure. There will then be less postoperative shock and disturbances. If the hernial opening be very large, strong silk or linen or silver wire may be used in the closure. In these cases, Wiener(5) has used a modification of Bartlett's(6) filigree with good results, though I have never found it necessary to resort to wire suture or the filigree in effecting a suitable closure.

ABSTRACT OF CASES.

The herniotomies in each of the following cases were performed by a modification of either the Ferguson or the Halstead operation, leaving the cord in the floor of the canal. The bowel and the sac of the sliding hernia were treated by the author's method. As far as the writer has been able to ascertain, there have been no recurrences after operation.

CASE I.—Male, age seventy-four; had had three operations for hernia on left side; recurrence after each operation. At the fourth operation (1904) encountered sliding hernia of sigmoid; sac as large as the fist; considerable scar tissue made operation tedious; bowel dissected free and raw surface covered by flaps from redundant sac; bowel returned and large hernial opening closed by double interlocking silk suture; operation for hernia completed; no recurrence; four years later, operation for right inguinal hernia.

CASE II.—Old man, double inguinal hernia of large size; right side, numerous bowel adhesions; left side, large sliding hernia of sigmoid; double herniotomy; recovery.

CASE III.—Old man; sliding hernia of sigmoid extending into

scrotum; adhesions; sac reconstructed; herniotomy; recovery.

CASE IV.—Adult male; right and left inguinal and right femoral hernia, left inguinal of large size, sliding hernia of sigmoid; numerous adhesions; hernia repaired; recovery.

CASE V.—Adult male; previous herniotomy on right side; left side, hernia size of fist; sliding hernia of sigmoid; ring small and bowel returned with difficulty; Trendelenburg position; stump of sac enchored; herniotomy; recovery.

CASE VI.—Adult male; large left inguinal hernia; tissue relaxed; undescended testicle on the left side; small hydrocele; sliding hernia of sigmoid extending to scrotum; sac reconstructed; operation for hydrocele, and testicle deposited in scrotum with some difficulty; herniotomy; recovery.

CASE VII.—Old man; abdominal wall greatly weakened and all hernial openings much enlarged; double inguinal and left femoral hernia; hydrocele left side; sliding hernia of sigmoid into left femoral pouch; hernia repaired; radical (inversion) operation for hydrocele; recovery.

CASE VIII.—Adult male; irreducible right inguinal hernia; sac contained omentum matted together; omentum ligated and severed; sliding hernia of cecum; appendectomy; hydrocele treated by inversion of sac; herniotomy; recovery.

CASE IX.—Adult male; irreducible hernia; sac contained sliding hernia of cecum; appendectomy; herniotomy; recovery.

CASE X.—Adult male; right inguinal hernia of many years' standing; sliding hernia of cecum; numerous dense adhesions encountered; appendectomy; sac reconstructed; herniotomy; recovery.

CASE XI.—Adult male; inguinal hernia on right side as large as the fist, on left side as large as a child's head; large sac on left side isolated and contents returned to abdominal cavity; on right side hour-glass sac encountered; sliding hernia of cecum in upper portion of sac, while lower portion communicated with hydrocele; hydrocele treated by inversion method; appendectomy; bowel treated and sac reconstructed; double herniotomy; recovery.

CASE XII.—Adult male; sliding hernia of sigmoid in left inguinal region; bowel returned; sac reconstructed; herniotomy; recovery.

CASE XIII.—Adult male; left inguinal hernia; had worn a truss; considerable subperitoneal fat encountered; which weakened the abdominal wall; sac isolated; bladder was easily pulled

down; a dense constriction at external ring; hour-glass sac; sigmoid adherent to sac at constriction; herniotomy; recovery. The anatomic condition was interesting in that it illustrated how a sliding hernia may advance.

CASE XIV.—Adult male; double inguinal hernia; sliding hernia of sigmoid on left side; bowel treated; sac reconstructed; double herniotomy; recovery.

CASE XV.—Adult male; large right and left inguinal hernia; left side, sac isolated; herniotomy; on right side patient had received treatment by the injection method; neck of sac obliterated; a sliding hernia of cecum had pushed its way around the neck of original sac; appendectomy; bowel returned; sac reconstructed; herniotomy; recovery.

In the treament of sliding hernia, Hotchkiss(7) has used the inverted sac in the construction of a sort of mesentery. By this method, while it may be possible to return the bowel, there is less opportunity for effecting a satisfactory peritoneal closure, and in cases where the sac is large, there will be redundancy of tissue. I believe it is best to treat the sac and bowel separately, so that the intestinal attachment may be freed at some distance from the ring.

Of the fifteen cases of herniæ operated on by the reconstruction of sac and the flap method, ten were sliding herniæ of the sigmoid and five were sliding herniæ of the cecum. All the cases occurred in adult male patients. In one case the sliding hernia was through the femoral ring, there being also present a right and a left inguinal hernia. In eight cases, there were double inguinal herniæ, and in two instances these were complicated by femoral herniæ. Undescended testicle was encountered once and hydrocele four times. In the fifteen cases, twenty-five separate herniotomies were performed, all the cases making a satisfactory recovery.

In conclusion, I wish to emphasize the following observations:

That a sliding hernia is irreducible by any of the nonoperable methods and that a truss, when worn, may be harmful and painful.

That in these cases the usual surgical methods for treatment of hernia fail in their lasting results, and that recurrences are frequent.

That for success it is necessary to free the bowel so that it may be properly replaced, and to completely obliterate the sac.

That the author's method has proved successful and that the steps of procedure are applicable in the majority of

cases so that the method of repair may be considered a typical operation.

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DISCUSSION.

DR. JOHN YOUNG BROWN, St. Louis.—I do not think anyone can appreciate the difficulty of this work unless he has had experience in dealing with the variety of hernia to which our attention has been called by Dr. Kirchner. My experience has been limited to five cases, and I have had the opportunity of seeing Dr. Kirchner operate in six or eight of his cases. The cases that have come under my observation have all been on the right side. In three of them the cecum and appendix were densely adherent to the sac, making it difficult to liberate the adhesions, and I have found that the method advocated by the essayist, namely, of converting this complicated variety of hernia into a simple hernia, so that we can return the bowel and do the radical operation, has been of the greatest possible value to me.

There is one thing in dealing with these hernias that must be carefully avoided. As Dr. Kirchner has shown, the sac is incomplete. In one of my cases in endeavoring to open the sac, the bowel being attached behind, I came near getting into the bowel proper. This sliding variety of hernia is attached behind by the folds of mesentery, and by opening the sac in front, lifting up the bowel in the manner in which he has described, cutting the sac at right angles, the bowel is returned so that there will be no constriction of it at this point.

I think the operation is most ingenious, and one that is going to be of great benefit in handling cases of this type.

DR. KIRCHNER (closing).—I have nothing further to say except that I would like to emphasize again the importance of being careful not to injure the bowel, because as was remarked by Dr. Brown, the sac, which is incomplete, renders the bowel very susceptible to injury.

ANGIOMA OF UTERUS, BLADDER AND BROAD LIGAMENT. REPORT OF OPERATION AND CURE.

BY

H. O. PANTZER, M. D.,
Indianapolis, Ind.

A VISCERAL angioma sufficiently large to cause serious disturbance of function is of rare occurrence. Many text-books on surgery and gynecology either fail at all to mention such, or, mentioning it, do so with unsatisfactory brevity. These points seem to warrant the publication of a case of progressive angioma of the uterus, bladder and right broad ligament which threatened death by vesical and uterine hemorrhage, until relieved by surgical intervention.

Mrs. V. O., age twenty-six, was brought on stretcher from a distant part of the State to the Deaconess Hospital at Indianapolis on September 28, 1909, where the writer first saw her. Patient had been confined to bed at home for six weeks. She had suffered exsanguinating hematuria and metrorrhagia; violent and painful vesical tenesmus; pain and throbbing through pelvis and vagina; chills and fever; nausea, vomiting and constipation. The latter no doubt were aggravated by the medicines necessary to relieve pain and insomnia.

General health until the recent past has been exceptionally good. Menses were normal as to time, quantity, duration, and freedom of pain. Married five years. Three pregnancies. The first and second occurred four and three years ago, respectively, went to full term, and each terminated in protracted forceps delivery. The cause of dystocia not known. Children born dead. Child-bed in each instance was attended with chills and fever, lasted five or six weeks. Recovery of strength slow. The third pregnancy occurred one year ago. It eventuated in miscarriage at about the sixth or eighth week. Patient, in consequence, was cureted, and had chills and fever. Confinement to bed five weeks. Since, patient has been in impaired health. Notably, the bladder has been irritable, urination frequent and smarting, and since August, 1909, is attended with bleeding. After the abortion, menses were regular the first three months.

Thereafter, bleeding occurred at almost any time, with and without concurrence of physical strain. Blood at these times was variable, light and dark in color, clotted and fluid, profuse and sparse. There was less bleeding, though present much of the time during the six or eight weeks of the last pregnancy. Patient suffered pain, "bearing down misery," likened to child-bearing, always more in middle and right side. Profuse whites present whenever there was no red flow. Never any chafing by this cause.

Patient is a blonde, of medium size; strong, bony frame, rather muscular, greatly emaciated. Skin dry, yellowish. Lips blanched, shriveled. Tongue dry, coated, foul. Dyspnea and retching. Temperature 101°; pulse 120, small, variable; respiration 20 to 24; abdomen flat, rather drawn. Vaginal outlet relaxed without distinct rectocele, no cystocele. Uterus in medium position, moderate decent, movable with some restriction to right. Cervix variously lacerated and nicked. There was felt throbbing in upper uterus, vesicovaginal wall, and right half of urethra, extending into right parametrium.

Ectopic gestation, possibly associated with a pyosalpinx, was thought of. Differential or positive diagnosis was not at once attempted. Attention was given to the relief of the grave general condition of the patient, the distressed functions of stomach, bowels, skin and kidneys. Diet by mouth was limited to fluids. Feeding by rectum of salt water and sodium salicylate. Mild laxatives by mouth as soon as borne. Repeated lavage of the colon. Hot-water bottles to the lower abdomen, hot vaginal douches, etc.

Within a few days there was a marked general and local improvement. The rectum and sigmoid, previously filled with scybala, no longer interfered with accurate palpation. There could be distinctly outlined a somewhat softish, throbbing, worm-like mass the size of a walnut about the right horn and fundus of the uterus, and throbbing vessels continuous downward from it upon bladder and right parametrium. Left salpinx and ovary were determined normal. Right ovary was not felt distinctly. Right pyosalpinx, or pyovarium, now was excluded, the more because chills and fever had subsided. These, in all probability, in the past, had their origin in the clogged state of the intestine. The bladder during these few days, too, had shown great improvement. At first it often discharged what was practically all blood, and at other times was only less such. Now

the passages from the bladder often were only lightly tinted with blood. The quantity of urine passed was greatly increased. Irrigation with hot borated water left the bladder irritable, but much less painful.

A few urinalyses are here introduced.

September 30, 1909. Color very dark reddish, faintly acid. Specific gravity 1015. Large amount of albumin. Sugar negative. Practically pure blood.

October 7, 1909. Specimen taken by catheter. Light yellow, turbid, specific gravity 1012, slightly acid. Urea 1 per cent., albumin negative, sugar negative. Many pus cells, many red blood cells, occasional cells from pelvis of kidney, Bartholinian glands and uterus.

October 7, 1909. Voided specimen. Color red, turbid, specific gravity 1012, acid, urea 1 per cent., albumin 5 3/4 per cent., sugar negative. Many pus cells. Many red blood cells. Occasional convoluted tubule cell. Bladder cells.

Search for tubercle bacilli in the urine was invariably negative. Blood and albumin in the urine had directed attention to the kidney, as a possible cause for the hematuria.

The vigorous pulsations of the arteries in the parts above mentioned, in special, the throbbing, worm-like feel of the greater mass about the horn of the uterus, was so distinctly angiomatous that by this time the condition was definitely designated angioma. An association with ectopic gestation was still being considered.

October 11 and 14, 1909. Drs. Wishard and Hamer cystoscoped the bladder. Multiple little pulsating elevations and pulsating parts of longer vessels were seen about the trigonum, base and fundus of the bladder, more on their right sides. Quite a bulge, or eminence, composed of throbbing vessels was found in front of the right ureteral orifice, obscuring it and making impossible its catheterization. This part, whenever touched by the catheter, gave pain. Left ureteral orifice was found unchanged. The catheterization of this ureter was not attempted. The cystoscopic picture was typical of submucous angioma. I feel it is a pity a photogram of this interesting picture was not secured. A search for such in works devoted to cystoscopy and vesical diseases failed to find it anywhere.

Operation.—October 16, 1909. Narcosis: two H. M. C. Abbott tablets, supplemented by chloroform. Median celiotomy. There was found a throbbing tumor on right half of body of uterus, the size of a small hen egg, which had extending from

it large tortuous throbbing vessels on to the front of uterus and down its right margin, the right half of the bladder, the tube and the contiguous parts of the right broad ligament.

Diagnosis.—Racemose angioma of the uterus, bladder and right broad ligament. The tumor was suggestive of extensive angiomata of the face such as the writer has removed in other cases. This consideration made inviting an attempt to remove the tumor from the uterus. What could be done, if anything, to the racemose extensions upon the bladder and elsewhere was left for decision later on. The angiomatous mass in the uterus, it was revealed, had a definite capsule. Its detachment was effected in large part without much difficulty or much hemorrhage. Then, however, the danger of hemorrhage and injury to bladder became patent, and this procedure was abandoned. There seemed nothing left to do but to attempt ligation. The right ovarian artery at the infundibulo-pelvic ligament, and at its junction with the uterine artery and the right uterine artery low down on the right margin of the uterus were individually securely ligated. Next the uterus was tied at various heights by sutures passed deeply through the tissues of the uterus above the bladder, in a manner to include all angiomatous vessels proceeding from the tumor down upon the bladder. The punctures with the round needle were everywhere followed with much bleeding, which, however, was satisfactorily controlled as soon as the sutures were tied. The tissues at once assumed a quasi-quiescent state. The peritoneum over the seat of the tumor in the uterus was lacerated in the effort of peeling out the tumor. To cover this the right tube was stitched over it. Chromic gut sutures No. 1 were used throughout.

Doubt as to what would be achieved by this procedure was entertained. This doubt was the greater because the tissues of the tumor suggested malignancy, notably about the parts in the broad ligament. On the other hand, there was much in the make-up of the situation to impel one on. There were the youth of the patient and her ardent wish to be saved. I will confess that at the end of the operation I felt rather disconsolate, as to the ultimate effect.

A cursive examination of the appendix before closing showed it enlarged and congested, but, to avoid further trauma, nothing was done to it. Both ovaries and tubes had been found normal, and the uterus normal, except where the angioma affected its anterior wall.

The first night and day and part of the following night patient suffered greatly from dyspnea. Respirations reached as high as 40; pulse 110 to 120. The body had to be raised on incline. These phenomena it was assumed were owing to the ligation of all of the ovarian vessels. Otherwise than this nervousness the surgical recovery was uneventful. There was no vomiting. There was no notable bleeding from bladder nor uterus while patient was at hospital, though the bladder continued irritable and urination was painful. Patient regained her general health with youthful vigor and left the hospital for home within three weeks after the operation.

Soon after reaching home, patient contracted bronchitis, attended with violent coughing. Then came return of the hematuria as bad as ever. Hydrastis canadensis was tried and for a while seemed to avail none. Her life was despaired of again. However, after fourteen days the hematuria ceased and has never returned.

April 21, 1910. Patient presented herself looking the picture of health. Urination was still painful, though not frequent. Menses were profuse, and each period lasted three weeks. There was sacral ache. Examination was requested, but deferred at wish of patient.

January 3, 1911. Patient reported in person. Since her last visit the hydrastis was taken regularly for three months, then cod-liver oil substituted for it. Menses during the last six or seven months have been regular, without pain, except moderate discomfort the day before the flow appears. Bladder is only occasionally troublesome. There was no return of the hematuria. Patient has suffered several attacks that were rather distinctive of appendicitis. Naturally the thought of a revival further up the broad ligament came up. At times of such attacks the bladder irritability was revived. Patient also suffered ache in lower pelvis after strain or long walks.

Physical examination revealed a tender appendiceal region. Uterus was relatively small, in normal anteflexion. Right horn negative as to tumefaction, or throbbing. Right parametrium reveals throbbing fulness, extending to right pelvic wall. Diagnosis: Recurrence of angioma in right broad ligament. Appendicitis. Immediate operation advised, but not accepted.

January 14, 1911. Patient returned with signs and symptoms of an acute appendicitis of two days' standing requiring immediate operation.

Operation, January 16, 1911. Median celiotomy through old scar. Uterus and bladder showed no evidence of angioma, but the right broad ligament was alive with throbbing vessels extending up to near the cecum. The appendix was inflamed, distended with pus. It was ablated. The throbbing vessels were extensively ligated at their uterine and pelvic ends. Uneventful recovery.

March 3, 1911. Patient reported in fine health. She looked ten years younger than when first seen. There have been no more bladder nor uterine symptoms. No sense of throbbing in right parametrium. No examination at request of patient.

September 9, 1911.—General condition perfect. Uterus was found in median line, movable freely on left side, somewhat less on right. Right parametrium somewhat infiltrated, nontender. Throb of arteries was noticeable throughout entire body. The same in right parametrium: no more no less in intensity though more diffuse. However, no thrill was felt. Reexamining after five minutes, when the patient was evidently calmed, the throb of all arteries had ceased. The parametrium, too, was without throb.

Epicritical Remarks.—On examination the bladder and uterus one year and a half after operation were found well. It is probable they will continue so. The parametrium, it may be hoped, will likewise do well, though this is not as certain. At all events, the parts herein involved would affect no vital function and it may be assumed their return would have little or no serious clinical significance.

There is much of speculative interest in the history of this case. Questions arise: Was the angioma of the uterus the cause of dystocia in the first two pregnancies? Was it the cause of abortion in the third? By the lack of details pertaining to the former, this cannot be mooted here. As regards the latter, an etiologic relationship may be assumed. Angioma as a cause of bladder hemorrhage is clearly established by this case, and must be considered in the etiology of hematuria. The curative effect of ligation in this case is in consonance with like procedures applied to the same disease in other parts, notably the skin. The intense nervous excitement, dyspnea, etc., following the circumovarian ligation at the first operation is interesting as indicating, probably, systemic disquietude over an altered or abolished ovarian secretion.

DISCUSSION.

DR. WALTER B. DORSETT, St. Louis.—I have been very much interested in this paper as well as in the method which the author has pursued. I have had two cases of angioma of the uterus in which I have taken out the uterus, and, if I understood the essayist, he did not remove the uterus in his case. If so, so much the better, for it is an advance in surgery. In operating on these cases in which we have a suspicion of angioma, on account of hemorrhage, which is the greatest difficulty in the management of these cases, I think the ligation of the vessels, ovarian and uterine, is best made by the *en masse* method, that is, to grasp the whole mass with a good strong forceps and ligate on the outside of the forceps. I am compelled to state my belief in that, for the reason that in one case on which I have operated, in attempting to include the vessels and ligate them individually, I had a little trouble in that a fatal hemorrhage ensued. I attempted to ligate the ovarian artery and the ligature slipped off and the ovarian artery slipped up under the peritoneum. I slit up the peritoneum, got hold of the bleeding artery and thought I had secured it, but the woman had a sudden hemorrhage during the night from which she died, so that I believe in the ligation of angiomas of the uterus, where we have an abnormal condition of the arteries themselves, it is best to ligate *en masse*, and not only ligate them *en masse*, but sew in the suture after you have thoroughly tied it with a No. 2 catgut ligature, or No. 2 double. I believe in those cases we will succeed very much better by so doing, and will not run the risk of hemorrhage. Even after you have tied well such a pathological vessel, there is always an element of danger of secondary hemorrhage.

DR. JOHN W. POUCHER, Poughkeepsie.—Dr. Pantzer was very fortunate in his case in not having postoperative or secondary hemorrhage. In one of these cases, after an operation had been performed by a colleague from another city, I had the after-care of the patient, but unfortunately this patient, although there was no sign of hemorrhage at the time the angioma was ligated, suffered severely from a secondary hemorrhage, and the family insisted upon waiting for the operator to come from a distant city, and the patient died as the result of the secondary hemorrhage. But it is very evident that simply removing the uterus and tumor would not have been attended with the danger of secondary hemorrhage, and if in all these cases we can be assured of not having a recurrent hemorrhage, the conservative method would be very much preferable.

DR. FRANCIS REDER, St. Louis.—I can readily appreciate the position of Dr. Pantzer with reference to operating on such a case as he has presented. I have met with various angiomatous conditions of the uterus in connection with fibroid tumors, where it was necessary to ablate the organ. Sometimes we meet with an angiomatous condition of the pampiniform plexus in the broad ligament, and here the ligation method as carried out by Dr.

Pantzer will usually effect a cure. We know that in these racemose angioma we frequently have destruction of the tissues, often of great density, which lie directly in contact with the angioma.

I would like to ask Dr. Pantzer whether there was any destruction of the anterior wall of the uterus, and whether he has found any benefit by introducing the ligatures through the anterior wall of the uterus in the manner he has described.

Furthermore, I understood you to say, Dr. Pantzer, that you ligated the right ovarian artery, and both uterine arteries, but I did not hear whether you ligated the left ovarian artery or not. In ligating both uterine arteries do you suppose you receive a sufficient nutrient supply from the anastomosis for the vitality of the uterine body?

DR. CHARLES L. BONIFIELD, Cincinnati.—Dr. Pantzer's case is certainly very interesting, and he is to be congratulated on his patient making so nice a recovery.

I quite agree with Dr. Dorsett that it is best to ligate the ovarian artery *en masse*, and during the report of the case it struck me that it might have been possible and would have made the operation easier, had the doctor after ligating the ovarian artery on the right side proceeded to ligate the internal iliac artery, as we do in some cases of extensive cancer. In this way he would have had thorough control of the arterial supply of the tumor.

DR. PANTZER (closing).—In the past in operating for the removal of racemose angioma of the face I have removed extensive masses and have never found an insurmountable difficulty in controlling hemorrhage. In this case I started out to peel the tumor from its position in the right horn and anterior wall of the uterus, and succeeded well in doing so until I came to where I approached the bladder. From the cystoscopic view I had in mind the alive throbbing of the vessels upon the fundus and base of the bladder. I knew there was such an atrophy of the adjacent tissues as Dr. Reder has referred to. I felt I had no right to go farther. It would have meant resection of the bladder, with perhaps removal of the greater part of it, with a questionable result I felt I was warranted in proceeding only by ligature. I made circumferential ligation of the vessels. I ligated the ovarian vessel at the infundibulo-pelvic ligament, and at its point of anastomosis with the ascending arm of the uterine artery; next the uterine artery low in the broad ligament. Alone the part in the lower outer angle of the right broad ligament was not ligated. This was later ligated at the time of the second operation. This practically met your suggestion, Dr. Reder, of tying off the afferent vessels. I am rather hopeful that the patient will have no more hemorrhage from the angioma. As the individual was young I felt prompted to do utmost conservative surgery. The tumor of the uterus grew outward rather than inward, as naturally it would grow in the direction of least resistance. It had not eroded the inner part of the anterior wall,

but grew into the peritoneal space. The future of this individual may have something of interest to report.

Regarding the effect of the ligation upon the uterine circulation, I will say that menstruation was regular afterward. It was profuse and continued for about three weeks at each of the first three or four months. Thereafter the flow steadily lessened until now the menstrual discharge is normal in quantity and duration.

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CONGENITAL MUCOID MULTICYSTIC TUMOR OF THE SMALL INTESTINE.

BY

H. W. LONGYEAR, M. D.,

Detroit, Mich.

(With plate.)

THE rare pathologic condition which has given the occasion for this paper, and the naming of it as appears in the title, was brought under brief observation, accidentally, during an operation for acute appendicitis. As the author, thus far, has not been able to find any descriptive literature fitting the pathology, the case is presented, hoping that by placing it on record additional knowledge on the subject may be gained from the experience of others.

CASE.—A patient of Dr. C. G. Jennings, of Detroit, a girl six years of age, was attacked on the morning of March 7, 1911, with appendicitis of fulminating character, and was operated at 11 P. M. of the same day. On endeavoring to locate the appendix—a long one situated behind the cecum—through a small incision, a tumor was encountered lying to the right of the umbilicus. To digital touch it felt slightly nodular, like the spleen, and on bringing it under the incision it had the bluish color and segmented appearance of that organ. By extending the incision the mass was readily brought outside the body, as no adhesions or shortness of its attachments presented. It was then seen to consist of a segment of the small intestine of about 2 inches in length, on each side of which was a mass of small cysts, which were packed closely together, none occurring singly, and resembling, somewhat, the arrangement of kernels of corn on the cob, varying, however, considerably in size, the largest measuring about 1/4 inch in diameter. The cysts were translucent, and on being brought outside, lost the bluish color which was noted when viewed through the small incision. The mesentery was not involved, but the cysts were packed closely down against it along the entire length of the involved portion of the gut. The policystic masses on each side were nearly symmetric, and each embraced about one-third of the circumference of the bowel, leaving the distal third free.

There was no evidence of any kind of irritation having affected the peritoneum in any way, that membrane being smooth and free from adhesions or discoloration. The peritoneal covering of the uninvolved part of the bowel situated between the cystic masses was smooth and glossy. One of the cysts was incised, whereupon several drops of a semi-fluid, viscid, clear substance, resembling mucus, slowly exuded.

The question of resection of the bowel was discussed, but as the tumor apparently had had no part in the causation of the attack necessitating the operation, probably had never caused any trouble and might never do so, as it was doubtless of congenital origin, it was decided to let it alone and leave it for a future operation, if at any time obstructive symptoms should indicate an increase of growth. Resection of the bowel in the presence of a violent appendicitis did not seem justifiable, so that the gut with its interesting exhibit was replaced and is still *in situ*, and has thus far caused no symptoms, the child having been in perfect health since convalescence, which was normal in every respect. The drawing here presented represents the condition as sketched from memory.

To sum up the gross pathology of the case, so far as the author was enabled to learn it by the brief examination, we have a benign, non-inflammatory multicystic tumor of the small intestine about 2 inches in length, apparently springing from the bowel at its mesenteric attachment, and developing outward, each way, from that point, so as to involve about two-thirds of the free border of the bowel, the cyst being covered by a very thin wall, composed of peritoneum only, and containing a clear, viscid semi-fluid substance resembling mucus.

During the convalescence of the patient, the author, knowing that Drs. Wm. H. Welch and J. M. T. Finney, of Baltimore, had done some work in the investigation of intestinal cysts, wrote to Dr. Welch, and later the patient was sent to Dr. Finney for an opinion.

Dr. Welch writes: "I should judge, from your description and the drawings, that the cysts on the wall of the intestine belong to the general class of the so-called gas-cysts of the intestine. While, in most cases which have been reported, the cysts contain gas, in a few of apparently the same class of intestinal cysts, the contents have been in part or wholly serous.

"The first monographic treatment of the subject is by Winands in Ziegler's Beitrage, Bd. xvii, p. 38 (1895). Dr. Finney has

within a year or two described a case and collected the literature His case was one of pure gas cysts. The condition has usually been encountered more or less accidentally at operations or at autopsy. There are various speculations about the causation, which Finney cites, but nothing is positively known, and my mpression is that as little is known about the clinical features.

"I should be interested in knowing whether you think any of the cysts contained gas, or if, after referring to the literature, you think my suggestion of the nature of the cysts is a probable one. I may be quite off the track in my judgment, but as soon as I looked at your drawing I was reminded of the two or three cases of gas cysts of the intestine which I have seen. The condition is a very rare one in hnman beings. There are cases reported where the surgeon has encountered these cysts and replaced the bowel without removing them, and nothing further has been heard of the affection."

After examining the child, Dr. Finney writes, in closing his article on "Gas Cysts of the Intestine."

'Since a number of these cases have seemed to disappear following operation for some other cause in which nothing special was done to the cyst, I feel that in the absence of any definite symptoms it would be well to wait a while before undertaking any Surgical measures. It seems to me quite likely that this is another case of this interesting condition, as it corresponds very closely to the one with which I am familiar."

Dr. Finney's article reports one case of his own, which was discovered, as was the author's, accidentally, during an abdominal section. In his case, as well as in the others,there were a number of conditions noted which differed materially with those present in the author's case. In his cases cited the cysts contained gas, which was held under some pressure, as the cysts popped when pricked; some of the cysts were pedunculated. The cysts were situated more or less over the entire circumference of the bowel, being the most prominent on the free border, and some in the mesentry for some distance from the bowel; some of the cases showed redness of peritoneal inflammation around or upon the tumor.

Dr. Finney's paper on the subject of gas cysts is an exhaustive one, and contains about all that is known about this peculiar and rare form of pathology. He states that the etiology is not settled, and that the ideas on the subject may be grouped under three headings: 1. that it is a new-growth; 2. that it is of

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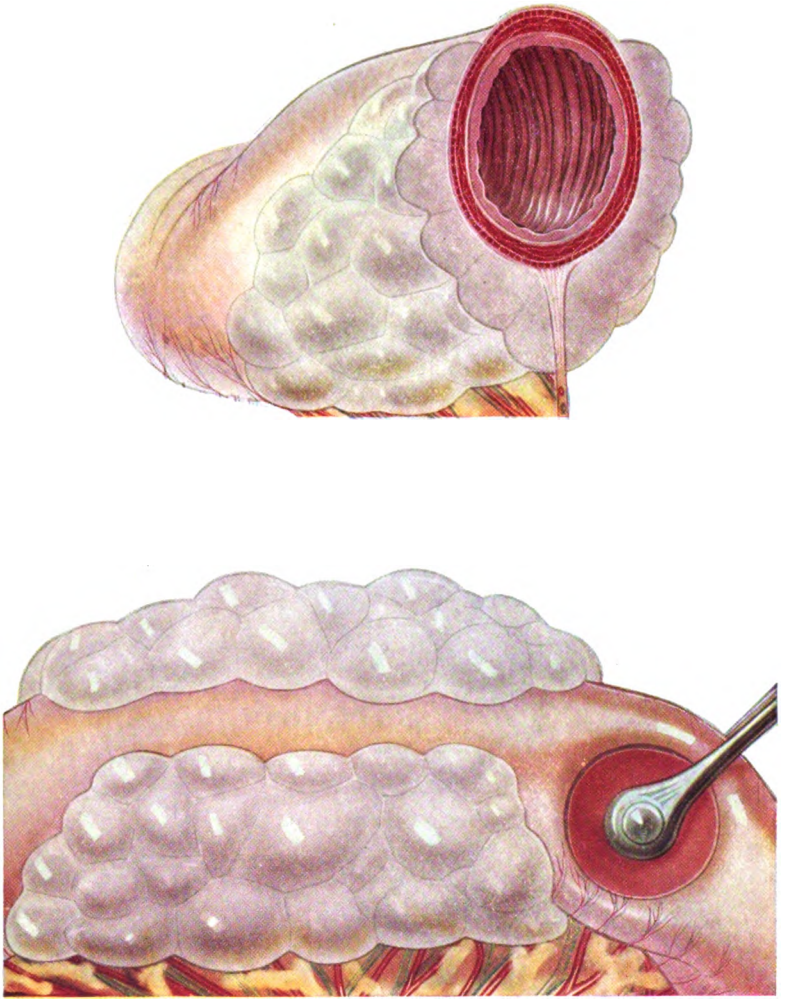

CONGENITAL MUCOID MULTICYSTIC TUMOR OF THE SMALL INTESTINE (1½ NATURAL SIZE.)—LONGYEAR.

bacterial origin; 3. that the presence of the gas cyst is due entirely to mechanical causes.

A short article in Keen's Surgery, p. 678, describes more nearly the conditions present in the author's case:

"Among the rarer intestinal tumefactions are the intestinal cysts. They are for the most part congenital in the small intestine, while in the large intestine, as a rule, they are acquired following an inflammatory process in the mucosa, as, for example, in dysentery.

"Gfeller has given especial attention to the congenital cysts, which, in the majority of cases, take their origin in preexistant relics of the irregularly obliterated ductus omphalomesentericus, whether this be by the separation of a part of the intestinal tube anlage or by germinal displacement.

"Corresponding to this varied anatomic origin it is easy to see that the walls and contents of these cysts may vary within wide limits. We may have all the appearance of a dermoid, on the one hand, or on the other hand simply thin-walled mucus-containing sacs.

"The diagnosis was not made in any of the recorded cases, since these cysts do not present any characteristic clinical symptoms. Nevertheless, it is true that irregularly recurring attacks of partial intestinal occlusions are known sometimes to have occurred, and these may suggest such a congenital anomaly as that in question.

"The prognosis is not unfavorable, except when the continuity of the bowel is impaired."

Many authorities mention cysts of the mesentery and small intestine, but they are usually unilocular and attain considerable size, causing symptoms indicative of an actively increasing abdominal tumor. Such cysts may be formed from an obliterated Meckel's diverticulum, or from a diverticulitis, the latter condition, however, being usually found in the large intestine.

Osler, *Modern Medicine*, vol. v, p. 586, under the head of "Tumors of the Peritoneum," says: "It has been shown by Carnot that pieces of gastric mucous membrane of the stomach, urinary bladder and gall-bladder, when implanted on the intestine, give rise to cystic formations. A case of a mesenteric cyst containing well-formed gastric mucous membrane with parietal cells has been observed. On the other hand, cysts in the mesentery may have originated behind the peritoneum, and, having migrated between the layers of the mesentery, even come into contact

with the intestine. These cysts are usually uinlocular, but occasionally multilocular cysts have been met with. The cysts may project from the free border of the intestine or from its mesenteric border and may then pass between the layers of the mesentery. The contents may be clear and serous, containing albumin and cholesterin, turbid with red or white blood-corpuscles and albumin; viscid with mucin; chylous, with the chemical composition of chyle. In very rare instances gas has been found in multiple cysts connected with the intestine; those formations have been regarded as homologous with the air-bladders of fishes, which secrete gas from the blood "(Mair).

Thus it is seen that the subject of cysts of the mesentery and small intestine might be conveniently divided into two classes, first, those which are congenital in their origin, and second, those which are the result of some peculiar accident. The first variety, the congenital, present few or no symptoms to indicate their presence, and are frequently multicystic and require no treatment, unless causing symptoms of intestinal obstruction by reason of their increasing growth obstructing the lumen of the bowel. The second variety of cysts are usually unilocular, rapid in development, cause active symptoms and require radical surgical treatment.

The author believes that his case represents the congenital variety, and hopes not only to bring out by the report more testimony regarding this obscure pathology, but also that it may assist in the more ready recognition of the identity of these rare tumors when accidentally discovered, and thus simplify their treatment.

DISCUSSION.

DR. HUGO O. PANTZER, Indianapolis.—In listening to the description of the case and seeing the photographs that were passed around, and hearing the discussion of this case, I am prompted to ask the question, Does this case not possibly represent a still different, a fourth variety, namely, retention cysts, such as occur when the excretory ducts of muciparous glands are occluded, *e.g.*, the Nabothian glands of the cervix. A localized lesion of the bowel, giving rise to a destruction of the upper layers of the mucosa, might occlude the excretory ducts of muciparous glands and in that way lead to the formation of retention cysts.

DR. LONGYEAR (closing).—With regard to Dr. Pantzer's suggestion, it seems to me that it is hardly probable, because in cases

of retention cysts the mucus would of necessity be obliged to be forced through all the walls of the intestine excepting the mucosa, to be simply covered by a thin peritoneal covering, as this was. In the condition he speaks of the cysts often contain muscular tissue, and the walls are quite thick.

DISEASES OF THE THYROID IN THE FEMALE.

BY

MILES F. PORTER, M. A., M. D.,

Surgeon to Hope Hospital; Professor of Surgery, Indiana University School of Medicine, Fort Wayne, Indiana.

COMPARATIVELY recent study and observation have convinced me that the thyroid gland deserves more consideration at the hands of gynecologists and obstetricians than it has received.

Permit me to recall to your minds some embryologic, anatomic, physiologic and clinical facts which seem to prove that the thyroid gland and its diseases are of especial interest to the gynecologist and obstetrician. In certain invertebrates the thyroid is a sexual organ and empties through a duct into the genital tract.

The thyroid is relatively larger in women than in men. Women are five times more prone to thyroid disease than are men. The thyroid normally enlarges during menstruation and during pregnancy. Cretins are sterile. Myxedema frequently causes sterility. Hypothyroidism occurs before puberty and after the menopause, hyperthyroidism during sexual activity. Ward's[1] investigations seem to show that the toxemia of pregnancy is due to lack of thyroid function.

Goodall and Conn[2] report a case in which a goiter was produced by pelvic tuberculosis and cured by the removal of the diseased uterus and adnexa, and a case of amenorrhea which was cured by administration of thyroid extract. Permit me here to remark that this paper of Goodall and Conn is well worth careful reading as one of the best discussions with which I am acquainted of the interrelationship of the thyroid gland and the female sexual organs.

There is much clinical evidence in support of the theory that what may be termed a physiologic hyperactivity of the thyroid is a valuable safeguard against puerperal toxemias and infections.

Potet and Kenilley[3] found cirrhosis of the connective tissue of the thyroid with softening of the colloid substance in four fatal

[1] *Surgery, Gynecology and Obstetrics*, December, 1909.
[2] *Surgery, Gynecology and Obstetrics*, vol. xii, p. 457, 1911.
[3] *Progressive Medicine*, vol. iii. p. 177, 1910.

cases of eclampsia and three fatal cases of puerperal sepsis. In view of the recent investigations of Willson and others into the pathologic histology of thyroid disease these findings are in corroboration of the clinical findings along this same line.

The following cases are selected from those that have come under my own observation. The salient facts are reported as suggestive rather than convincing.

CASE I.—Mrs. W., a young married woman. Patient of Dr. B. P. Weaver, my assistant, came under his care suffering from intractable vomiting of pregnancy. She had had two abortions, one supposed to be due to the toxemia and one produced because of the toxemia. The usual treatment proved of no avail. The administration of thyroid extract was followed by a cessation of the symptoms and she is now carrying the child with comparative comfort.

CASE II.—Miss H., age 26. Presented all the symptoms of hyperthyroidism in an extreme degree including amenorrhea of six months' duration. Injections of boiling water into the thyroid gland was followed by an amelioration of all symptoms including a return of the menses which are still regular at the present writing, six months later.[1]

Pinard[2] reported nine cases in which exophthalmic goiter showed unmistakable connection with ovulation. In several of his cases restoration of normal ovulation was accompanied by the subsidence of the exophthalmic syndrome. In one family hyperthyroidism was observed in three generations, the affection improving or disappearing with regular menses.

CASE III.—Mrs. C., referred by Dr. Murphy of Claypool, Indiana. Age forty-three, married twenty-two years. No coitus since marriage, because of pain, and an idea that child-bearing is degrading. She has had four attacks of "mental trouble," including the present one. She imagines herself the subject of a serious pelvic trouble. Menses are regular. She is very thin, has some tachycardia and is "extremely nervous." Physical examination of chest and abdomen engative. Sex organs are normal save that she complained of pain on the introduction of the finger through the intact and rather narrow hymen. She has a well marked goiter. I told this patient's physician that I thought her trouble was due to hyperthyroidism

[1] This case is reported in detail in my paper on the treatment of goiter by injections of boiling water, published in the *Journal of the A. M. A.*, vol. lvii, p. 1120, 1911.

[2] *Ind. Med. Gazette*, Calcutta, May, 1906; Abs. *Journal of the A. M. A.*, vol. liii, p. 151, 1906.

and advised the administration of iodine and desiccated thyroid as a therapeutic test. Both the iodine and thyroid increased the tachycardia which I think confirms the diagnosis of hyperthyroidism and strengthens my belief that a partial destruction of her thyroid will cure her. Her physician is now treating her with thyroidectin and will report later. This patient was also advised to become pregnant if possible in the hope that this would stimulate the thyroid to proper activity. In giving this advice I had in mind the possible coexistence in this case of hyper- and hypothyroidism.

CASE IV.—Mrs. M., in labor with her fourth child. Was seen by me in consultation because of hemorrhage. Although I could not feel the placenta through the cervix which was dilated to about the size of a quarter, yet I diagnosed a placenta previa marginalis and advised her immediate removal to the hospital. At the hospital the cervix and vagina were packed snugly with gauze. This stopped the hemorrhage and the patient's pulse improved until at the end of five hours she suddenly became restless, the pulse grew very rapid and irregular. Supposing we had a concealed hemorrhage, the woman was etherized and delivered within a few minutes of a small poorly nourished child which had been dead twenty-four hours or more. There was not sufficient blood in the uterus to account for the symptoms. On the following day she suddenly developed a very rapid weak pulse with air hunger.

I was called in and found no external hemorrhage, the womb was well contracted. Inquiry now revealed the fact that she had had frequent attacks of "palpitation of the heart" while carrying the child. Examination revealed a median thyroid tumor the size of a hulled walnut. She had several of these attacks during her stay of two weeks in the hospital, but they grew milder under the usual treatment for hyperthyroidism. All told this woman did not lose as much blood as is ofttimes lost in normal labor. Evidently the child died before the first hemorrhage occurred. Moreover, the child was poorly nourished, whereas both father and mother were well nourished.

Had this wo an's hyperthyroidism been recognized and properly treated it would seem quite possible that she might have given birth to a normal living child. Lichtenstein[1] and others have observed that exophthalmic goiter frequently causes separation of the placenta and death of the fetus. Kocher and

[1] *Progressive Medicine*, vol. iii, 1909, p. 168.

Trachevsky[1] have shown that the removal of the thyroid from pregnant animals results in their giving birth to rachitic young.

A clinical picture frequently presented to the gynecologist is that of a pale, poorly nourished, nervous girl or young woman complaining of some menstrual disorder and perhaps pelvic discomfort. My own observation is that the majority of these patients attribute their symptoms to some "female trouble," and that all too frequently this self-made diagnosis is concurred in by the physician. As a matter of fact this syndrome is more often the result of thyroid than of genital disease. Thyroid extract will cure more cases of chlorosis in young women than will iron and arsenic.

Perverted thyroid function is a frequent cause of menstrual disorders, especially menorrhagia and amenorrhea.

CASE. V.—Miss W., librarian, was referred to me by Dr. Drayer for the purpose of having her goiter injected with boiling water. She presented the symptoms of a moderate hyperthyroidism and in addition gave a history of an amenorrhea existing over a period of three months which occurred in the early period of her trouble which had existed about a year. There was nothing to account for her amenorrhea save the hyperthyroidism.

The fat, phlegmatic woman with amenorrhea probably needs thyroid extract while her emaciated sister will probably require treatment directed against over activity of her thyroid. Perhaps in the majority of cases in which genital and thyroid disturbances coexist, the former are the result of the latter, but the order is sometimes reversed as is shown by one of the cases of Goodall and Conn above referred to.

CASE. VI.—Mrs. X. consulted me for a goiter which she had had since puberty. She said that it increased in size at her menstrual periods and during pregnancy. She had had three children. She had a well-marked symmetrical goiter but no other symptoms of hyperthyroidism except that she spoke in a quick jerky manner and her pulse while sitting was faster than the average—eighty-five per minute. She regarded herself well, however, save for her "big neck." She requested me to examine her six-year-old boy, who accompanied her. He was much above the normal height, slender, rather anemic, and had pronounced tachycardia for which no physical basis could be found. In view of the facts concerning the heredity of goiter and the influence of the thyroid

[1] *Annals of Surgery*, vol. xxiv, p. 99, Abs.

on the growth of the long bones, this case is extremely suggestive to say the least.

My object in this short paper is to arouse interst and stimulate clinical investigation concerning the thyroid gland as a factor in the production of disease in women. Personally I believe it to be a field which promises an abundant harvest.

DISCUSSION.

DR. WILLIAM D. HAGGARD, Nashville.—I think this is an extremely interesting topic. I believe we are all agreed that the thyroid has a wonderful influence as a sex gland. For instance, the enlargement of the thyroid during the honeymoon is a well observed fact. Furthermore, the other end of life, the so-called climacteric, where the patient really suffers from a hypothyroidism, a lack of thyroid gland secretion is evidenced by the fact that in those patients who are fed thyroid extract the hot flashes and the other symptoms disappear to a large extent. Only a few days ago, showing the relationship between the sexual function and the thyroid gland, I saw a woman with exophthalmic goiter, with very marked symptoms of hyperthyroidism, who married last November, at the age of thirty, and by January had marked enlargement of the thyroid, with tachycardia, tremor, and a beginning exophthalmos. She conceived in February and aborted in May. During her pregnancy her symptoms were considerably exaggerated, and an interesting feature was that these symptoms all subsided after the miscarriage. She still has a chronic hyperthyroidism which has recently become more active and for which I think a partial thyroidectomy will be needed to relieve her. I am satisfied that there is a great undiscovered country in the ductless glands bearing upon their interrelation in the causation of some of our mysterious pathology. Of course, the straightforward diseases of the thyroid gland are very nearly crystallized now, but I am sure that this is the best compilation of facts bearing upon the inter-association of the genital organs and the thyroid gland that has ever been presented to my knowledge to any society, and we are indebted to Dr. Porter for this exceedingly clear exposition.

DR. HUGO O. PANTZER, Indianapolis.—I am delighted with the excellent résumé of this subject given by Dr. Porter in his paper. It brings to my mind a very interesting case I found in German literature. A young man who had made protracted ineffectual attempts at intercourse was beset with violent Graves' disease the following day and died within another twenty-four hours.

Two years ago I did a supravaginal hysterectomy and unilateral oophorectomy for fibromata in an individual who at the time had moderate Graves' disease. This patient had a conspicuous thyroid. Within twenty-four hours after the operation, I found the thyroid missing as absolutely as though I had taken it off with the knife. Nine or ten days afterward the patient

developed bilateral tonsillitis and then developed an hyperthyroidism in the worst degree from which she recovered only slowly during the next two months.

DR. ALBERT VANDER VEER, Albany.—It seems to me, the paper presented by Dr. Porter is really of great value to us. It is one that will help to elucidate many of the hidden secrets that the thyroid gland possesses. I have seen quite a good many cases of enlargement of the thyroid gland, straight cases, that we treat quite intelligently, but there are hidden cases, and particularly along the lines of thought suggested by Dr. Porter that are cleared up by a proper understanding of the action of the thyroid. As to its varied function, I doubt whether we understand it yet fully. The conditions that we meet with sometimes in the newly married woman and the symptoms that present are not cleared up to the point of correct diagnosis, and we find we are able to fasten upon the thyroid and when they yield to the thyroid extract in some cases they clear up most beautifully. I have been impressed with the condition of the enlarged thyroid in connection with uterine fibroids, such as has been referred to, and I recall one case that I have had under observation for some time. I removed the fibroid ten years ago. She was thirty-one years of age then; she had a good-sized fibroid tumor, and she had a marked enlargement of the thyroid gland. It disappeared very much in the same manner. Recently she came to me and said, "Doctor, I must be having the change of life." The uterine appendages had been removed with the fibroid, and she had gone along without any unpleasant symptoms up to this time. She presented all the marked symptoms of goiter, her menopause with hot flashes and all that pertained to that condition. On examining her I found that the thyroid gland was slightly enlarged. She presented many of the symptoms of exophthalmic goiter. Her case cleared up nicely under the use of the thyroid extract, but the cause of the condition and the therapeutic remedy given for it were not clear in my mind.

It is these rare papers, such as Dr. Porter has given us, that add to our understanding of these cases, and I for one appreciate very much what he has said this morning.

DR. EDWIN WALKER, Evansville.—Quite a number of years ago I hand an experience along this line that made an impression upon my mind, and I have not seen anything in the literature like it. This patient came from a highly neurotic family; had suffered from epilepsy during early life. At about puberty the attacks became much worse, and a good deal of the time the patient was in the condition of status epilepticus, having from forty to sixty attacks a day. Bromides had no effect whatever on these convulsions. At that time I had a case of myxedema in a man which developed after he had his thyroid destroyed by suppuration, and as I had this subject in mind I noticed that there were a few symptoms about this girl that suggested the possibility of hypothyroidism. She had puffiness of the face, she had a

swelling of her hands, and stiffness which resembled this patient. I put her on the thyroid extract. I fed her on partially cooked thyroids, and her recovery was so remarkable and so rapid that it did not seem to me to be possible. Whenever I would stop the administration of the thyroid extract there would be a return of the symptoms. At about that time the thyroid extract was put on the market. I kept her on thyroid extract for a year or more. She has been under my observation since that time; she was fifteen years of age then, and thirty-five years of age now, and she has been entirely relieved of her epilepsy. At that time, from the history of the case, it was either a strange coincidence or the two things were connected together.

DR. ROLAND E. SKEEL, Cleveland.—I was very much interested in Dr. Porter's paper, for the particular reason that it will induce the members to take part in the discussion and ask themselves questions since we know nothing definite and beyond doubt concerning the physiology and chemical pathology of the thyroid. I was also interested in the remarks of Dr. Pantzer regarding his patient who thought she had reached the menopause and was having hot flashes and other symptoms indicative of the menopause as well as hyperthyroidism, but whose symptoms cleared up under the use of thyroid extract. If her symptoms were due to hyperthyroidism it is obvious that she would have been made worse instead of better by the administration of thyroid extract. There seems to be an intangible connection between the lack of thyroid secretion and eclampsia. I say intangible because the evidence is all of the most contradictory character. It is said for instance that eclampsia does not occur in the presence of *hypertrophy* of the thyroid and yet last year I saw a patient who was choking rapidly because of the tracheal pressure of an enormously hypertrophied thyroid. She was eight months pregnant and had been unable to assume the recumbent posture for four weeks. She was at once sent to the hospital. On arrival in the middle of the afternoon had a very serious attack of dyspnea so severe that the stridulous breathing could be heard the entire length of the hospital corridor. It was thought the attack might have been precipitated by the excitement incidental to her removal, but it continually grew worse until evening when it became apparent that dissolution was imminent.

Thyroidectomy was performed under local anesthesia with the patient sitting bolt upright in her chair, and preparation was made for a rapid postmortem Cesarean section should the patient die before the operation was completed. The size of the goiter was such that the incision extended between the angles of the jaw on either side including a wide sweep downward to an inch above the sternum. The operation terminated successfully but as it was purely an emergency measure, the urine was not examined and the patient was given a full dose of morphia immediately to prevent if possible the straining which the delivery of even an eight months fetus would induce. To my consterna-

tion the routine examination the next morning revealed from 10 to 15 per cent. of albumin in the urine with all the general evidence of toxemia of pregnancy. These had not developed suddenly but were lost sight of in the hasty removal to the hospital and equally hurried operation. No more morphia was administered and the patient went into labor late that afternoon and in spite of all attempts to restrain her she strained terrifically and died instantly with an enormous gush of blood from the incision in the neck. The house surgeon, at the instigation of a nurse who witnessed the preparation for operation the night previously, opened the abdomen at once and secured a living child, which unfortunately succumbed two weeks later without any definite assignable cause aside from ordinary malnutrition. Autopsy on the mother was not allowed but the neck incision was opened and the ligatures on the four main sets of vessels found intact. While this was an interesting combination of circumstances its report at this time is justified only by the fact that it shows that the toxemia of pregnancy may co-exist with enormous hypertrophy of the thyroid. It seems to me that this case illustrates in a striking manner the risk we run in drawing conclusions from a very few cases. Our knowledge of the relation which exist between hypertrophy, hypersecretion, and the clinical syndrome of hyperthyroidism is still in a very hazy and confusing stage.

In individual patients there are alternating symptoms indicating at one time hyper-, at another hypothyroidism, and if we accept all that is said concerning the administration of thyroid extract it is equally good for both. While I believe papers of this character are valuable in that they contain suggestive ideas and stimulate the scientific imagination, we must not accept conclusions too readily. Some patients have palpable tumors and symptoms of hypothyroidism while others have no tumor but every evidence of hyperthyroidism, and while we are passing through this period of evolution in our knowledge of the thyroid and its pathological changes both anatomical and chemical, we must avoid dogmatic conclusions and hard and fast therapeutic rules.

Dr. William H. Humiston, Cleveland.—We see many cases in which we have a rapid pulse and many symptoms that we are at a loss to account for, and examination of the thyroid shows no enlargement. It is in such cases I have administered thyroid with good results. In many cases of neurotic women, where an abdominal operation has been necessary, and the recovery has been uncomplicated save for the rapid heart action, I have administered the thyroid extract with happy results. In the thyroid extract we have a very valuable remedy in these obscure cases.

Dr. Robert T. Morris, New York City.—It seems to me that we practically can blow hot and blow cold with reference to the thyroid extract in many of these cases. If we have a hypothy-

roidism, the thyroid extract furnishes a substance which is not furnished in sufficient quantity by the gland itself. If we have a hyperthyroidism, it often means that we have a compensatory hypertrophy of the gland which is under great demand, and in that case, if we give the thyroid extract, we lessen the need for compensatory hypertrophy on the part of the gland, so that in certain cases of hypothyroidism and in certain cases of hyperthyroidism, we use precisely the same therapeutic resource in the two different groups of cases, but each case in itself becomes a study. Now, in one case you will find with the X-ray alone you can overcome almost all of the symptoms of hypo- or of hyperthyroidism. In another case, with the thyroid extract you are using, while in another case you have to use both together, and in still another case you produce disastrous results with either one of the two. We cannot at the present time anticipate precisely what the result is going to be from the use of the thyroid extract until we have a much more elaborate classification of these cases, and a statement of them in such a way that we may anticipate results.

DR. PORTER (closing).—What Dr. Morris has just said in a very large degree explains many of the seeming contradictions that we find in connection with our clinical and therapeutic observations of these cases. The question is not so simple as it would seem upon the surface. It is quite true that our best working hypothesis to-day is the one of hypothyroidism on the one hand, and hyperthyroidism upon the other; but it does not follow by any means because this is true, that the question is so simple. It is not at all proven that a woman with Graves' disease is suffering solely from an overactive thyroid, but up to date this is our best working hypothesis. Here is a woman with a large goiter and she gets better with the administration of the thyroid extract. Nine-tenths of these women will get better for the simple reason that most individuals with large goiters are not suffering from hyperthyroidism at all but from hypothyroidism. It is the myxedemic patient, and not the hyperthyroid case that improves upon thyroid extract. The size of the thyroid cuts no figure whatsoever, a patient may die from so-called Graves' disease with no enlargement of the thyroid gland at all. It is not sufficient to make one or two sections from a goiter, but you have to section the whole goiter sometimes before you can arrive at a conclusion as to the character of the lesion. Instead of a single layer of cells lining the follicles you have the cells piled up, and if you have two or three areas in the thyroid gland showing this change, you may be sure the patient furnishing the specimen has Graves' disease and a careful inquiry will develop a corroborative clinical picture.

Another feature is with reference to the secretion. Instead of the follicle exuding a colloid material, it is more watery in nature. We do not look for a big gland or a little gland histologically when we have hypo- or hyper-thyroidism, respectively,

but inquire into the histologic changes. Thus far laboratory methods have not led us to the bottom of this matter, and, therefore, I have insisted on continued careful clinical observation in these cases as an aid in the solution of the problem. It will not be the first case that has been practically solved by clinical methods years before the laboratory ever explained how we solved it. We cured the ague with quinin long before we knew what the ague was due to. We cured syphillis with iodid of potassium and mercury before we knew what it was due to. We knew years ago that a man with septicemia or with typhoid had his blood stream poisoned. And so we can do much by careful clinical observation along this line. For instance, let us take a patient in whom hyperthyroidism so-called is suspicioned. If you give that patient iodine and the diagnosis is correct, the chances are a hundred to one the symptoms of hyperthyroidism will be aggravated. If you put the patient to bed and remove the sexual irritation, the chances are he or she, as the case may be, will improve and if this clinical result follows, it will strengthen your diagnosis.

My paper was simply suggestive. I do not know very much about the thyroid, but I would like to know more about it.

CERVICAL FIBROIDS.

BY

LEWIS F. SMEAD, M. D.,

Toledo, Ohio.

THE successful operative treatment of fibroid tumors of the uterine body, although a rather recent accomplishment, forms one of the most brilliant and satisfactory chapters in surgical history. Nearly every phase of the subject has been thoroughly reviewed and with the exception of the etiology we may consider the work fairly complete. However, the literature regarding fibroid tumors arising from the crevix or uterine body below the movable peritoneum is very much less extensive than the relative importance of the subject deserves.

Cervical fibroids, chiefly because of the great technical difficulties of their removal, belong in a class by themselves. Their anatomical relations and their immobility make distortion of viscera extremely common. The obliteration of landmarks and the inaccessibility of important structures are serious matters. In fact, until within quite recent years, the dangers incident to the removal of these tumors have been considered incompatible with the reasonable safety of the patient.

Fibroid tumors of the cervix, especially the subperitoneal variety, are not common. Mann saw only three cases in twenty-two years. Haultain(1) found thirty among 260 cases operated for fibroid tumor. Courty,(2) in 131 such cases, found 16 per cent. in the cervix. Schroeder,(3) in his series, found 8.1 per cent. and Lee(4) 5.4 per cent. J. R. Morison(5) and others report fairly large groups of cases, but most of them appear in the literature singly or in twos and threes. Bland Sutton, Haultain and others are of the opinion that cervical growths are present in about 5 per cent. of all women who have fibroids. We must of course include among cervical fibroids all cases of multiple fibroids where a cervical growth occupies the prominent place.

Like the same tumors in the uterine body these growths may be described as submucous, interstitial, or subperitoneal. However, the large subperitoneal tumors are the ones which give rise

to most of the difficulties, and they will therefore be the chief subject of this paper.

The subperitoneal growths may be anterior or subvesical, posterior, sometimes called retroperitoneal, and lateral or intraligamentous. A tumor may occupy any position between these cardinal points, and multiple tumors may fill several positions simultaneously. Statistics regarding the relative frequency with which tumors arise in each of these positions are meager. The anterior and posterior tumors are most common. Haultain(1) in his series reports seven anterior and fifteen posterior. Roger Williams(6) says that the tumors more often arise from the upper posterior part of the cervix. In a series of some sixty cases collected from the literature, in which the position was given, the writer found the posterior tumors only slightly more common than the anterior.

As to the vertical position on the cervix, Haultain(1) divides these tumors into supravaginal, intervaginal and intravaginal. The term intervaginal to apply chiefly to tumors arising under the movable vaginal wall covering the posterior part of the intravaginal cervix; that is, the tumors developing into the posterior fornix.

The physical characteristics of these growths do not differ greatly from fibroids in other positions. Their importance is due chiefly to their anatomical position and the distortion which necessarily follows their growth. This may be so extreme that when the abdomen is opened scarcely any structure can be recognized. The pelvis and lower abdomen are completely filled. The bladder is enormously elevated and enlarged by being spread out over the anterior surface of the tumor. The uterus is a mere knob on the top of the tumor. The shape of these growths is roughly elliptical with the long axis vertical. As to their consistency writers differ as to whether the cervical fibroids are harder or softer than other varieties. Complications and degenerations are fully as common as in tumors of the body.

The direction in which cervical growths extend from their point of origin is significant, for by it is determined in great part the character of the involvment of other structures. Subperitoneal fibroids arising anteriorly must grow up under the bladder or enter the peritoneal cavity between the bladder and uterus. Lateral growths fill the broad ligament, while posterior tumors pushing up the peritoneum behind the cervix obliterate the cul-

desac. Both the posterior and lateral tumors have a tendency to raise the rectum and sigmoid upward.

Most of the cervical tumors are sessile and are intimately and broadly attached, at times almost enveloping the uterus and neighboring structures. Such a tumor cannot readily vary its direction of growth. Laterally they reach the pelvic wall and growing upward they raise nearly every structure on the pelvic floor, or extending downward compress and distort the vagina, rectum and bladder.

Pedunculated cervical tumors are rare, and in their growth, being less intimately attached, they follow the path of least resistance and tend rather to push by than to distort the viscera.

An interesting point is the change in direction of growth which these tumors undergo. For instance, a tumor growing anteriorly may impinge on the symphysis and gradually be rotated into the broad ligament.

Various organs are displaced, distorted or more or less seriously injured by the growth of cervical tumors. The vagina is usually enormously elongated and nearly crushed out of existence. It is displaced to the front, back or sides of the pelvis. Its walls are often greatly atrophied by pressure. McCann(7) reports a case in which a posterior tumor actually ulcerated into the vagina. The uterus often cannot be discovered, but is usually raised high out of the pelvis on the top of the tumor. The cervix in these cases is at the top of the elongated vagina, well out of the reach of the examining finger. The external os may be merely a slit in the side of the tumor. Moreover, the whole cervix is greatly elongated and is sometimes flattened out on the surface of the tumor. In either event the cervical mucosa is greatly atrophied.

The tumors that block the birth canal are often of cervical origin. At the time of labor they cannot be displaced out of the pelvis because of their low attachment on the cervix, and the fact that they are under the peritoneum and intimately attached to neighboring structures. Before labor their removal is too complicated unless the condition demands that the pregnancy be terminated.

Fibroid tumors of the uterine body often receive a diminished blood supply during pregnancy. They are compelled to derive their circulation from a rather thin part of the fundus of the pregnant uterus, and for this reason their degeneration during pregnancy is a common occurrence. The circulation of cervical

fibroids, on the contrary, is more extensive and derived lower down in the uterus where the blood supply is more generous, and for that reason these tumors should show a tendency to increased growth rather than to degeneration. Is it not possible that with this increased blood supply a small cervical tumor might grow enough during the months of gestation to obstruct the pelvis?

Of all the disturbances caused by cervical fibroids those incident to the bladder are most striking and annoying. The base of the bladder may be raised to the level of the top of the symphysis making this viscus an abdominal organ. Bovée(13) reports a case in which the bladder was raised so high by a subvesical fibroid that it was entirely separated from the anterior vaginal wall. The bladder may be displaced in several ways. It may be pushed up by an anterior tumor growing below it, or it may be pulled up by its attachment to a tumor arising at the side or behind the uterus. A tumor may also push out between the bladder and uterus and thus exert a pulling force to raise the bladder. Not only is the bladder raised in these various ways, but it is enlarged by being stretched out over the whole anterior convex surface of the tumor mass. The bladder is apparently raised upward where the fundus is elevated by a dilation of the organ due to a blocking of the urethra by a fibroid.

Downward displacement of the bladder with cystocele formation occasionally takes place when a posterior or lateral tumor, growing upward without raising the bladder, fills the space under the symphysis and crowds that organ down. The same condition may also force the bladder to occupy a lateral position. A lateral position may be due to a broad-ligament tumor pushing the uterus with the bladder to the opposite side of the pelvis.

An interesting condition sometimes results when a small anterior fibroid is situated just behind the trigone. Such a tumor may not only block the urethra but may act exactly like the middle or posterior lobe of an enlarged prostate. A vesical pouch may form, simulating the retroprostatic pouch. As the residual urine increases the bladder becomes dilated, trabeculated, and its walls atrophied. Chronic cystitis of course is not long in following. The removal of such a tumor is an easy matter, and if done in time will be as satisfactory as the enucleation of a prostate. Some cases examined by Dr. John Keller, of Toledo, O., illustrate this boint beautifully.

When the ureters are displaced they are fortunately more

often crowded down than elevated by a cervical growth. Nevertheless their elevation is not uncommon, especially when tumors arise from the lateral cervix. They may occasionally be pushed up by a tumor growing low in the side of the cervix, but they are more often pulled up along with the peritoneum covering them or by adhesions between the ureter and tumor. This same pushing, crowding and pulling frequently causes a blocking or kinking which results in hydroureter. Knox(8) found the ureters more of less seriously interfered with in 25 per cent. of all fibroid cases.

The rectum is often much interfered with by fibroids, especially by those from the posterior and lateral cervix. The lumen of the bowel is frequently obstructed but is rarely completely blocked. Its walls are not infrequently so atrophied that they are no thicker than paper. When the cervical tumor is posterior or in the left lateral position the rectum and sigmoid are often raised up on the top of the growing tumor and may cover the whole left side of the pelvis so completely that it is with difficulty that the peritoneum is opened and the rectum and sigmoid pushed down preparatory to attacking the left side of the growth.

Among other organs the tubes and ovaries are greatly changed, being raised high in the abdomen. The round ligaments are greatly elongated and are atrophied and spread out at the uterine end. They can best be identified at the internal inguinal ring. The bloodvessels often show much displacement. The ovarian arteries are elongated and often covered by the sigmoid, but can usually be fund near the pelvic brim. The uterine arteries are usually entirely covered and made inaccessible by the tumor. However, if a cervical tumor arises below the uterine artery it may raise that vessel high on the side of the tumor, where it can be secured with perfect ease.

The value of an accurate preoperative diagnosis of the position and relations of the large cervical tumors can scarcely be overestimated. Every fact possible should be determined by vaginal and abdominal examination. Important conclusions can be drawn if one knows whether the vagina is crowded down or greatly elongated, whether it lies in front, behind or at the sides of the tumor, also whether the cervix is under the symphysis, against the promontory or entirely absent. To determine the position of the cervix it may be necessary to examine the patient when under the anesthetic. If at this time the cervix is so high that it cannot be reached, it will be possible at least to determine

the direction of the elongated vaginal canal. This is very important, for during the abdominal operation one will thus know upon which side the vagina can best be reached. If, in addition, a sound is passed into the vagina during the operation it will be still easier to locate the vaginal canal. The location of the vagina in these cases has been emphasized because it is almost always the key to the whole situation.

The position of the bladder should be outlined by filling it with water or passing a sound or cystoscope. A determination of the upper and lateral limits of the bladder on the anterior surface of the tumor will aid somewhat in forming a conception of the intraabominal condition.

Little can be learned of the position of the rectum by direct examination, but if the tumor is known to be posterior or left lateral in position one may reason that the rectum and sigmoid will probably be raised up or at least displaced by the tumor.

Small cervical fibroids are readily found by rectal examination if the uterus is pulled well down into the vagina. The small anterior tumors, however, can be studied with profit with the cystoscope. Their position and the reason why they are causing trouble can often be discovered. Not infrequently they simulate exactly the male prostate.

The operative treatment of fibroid tumors of the cervix is radical, rarely palliative.

The field for palliative operations is very limited. When the case is very complicated, as by abscess or unusually dense adhesions, or more important still, when the patient is unfit to withstand a serious operation one may consider Tait's procedure of ligating the ovarian vessels and removing the appendages or Martin's(9) operation of vaginal ligation of the uterine arteries. Little diminution in the size of the tumor has followed these operations, but more or less permanent relief from hemorrhage has been secured in some cases.

Radical cure in these cases can follow only vaginal or abdominal myomectomy or hysteromyomectomy. Any fibroid in the vagina, whether from the intravaginal cervix or protruding through the cervical canal, will of course be removed by way of the vagina. Moderate sized subperitoneal fibroids may readily be removed either by vaginal hysterectomy, the operation of morcellation or by myomectomy through an anterior or posterior vaginal celiotomy opening. However, all but a very few cases must be undertaken by the abdominal route.

In the abdominal removal of fibroid tumors of the cervix the incision is large and made with due regard for the elevated bladder. Unusual difficulty is experienced upon opening the abdomen in locating customary landmarks in the pelvis. The facts learned by vaginal examination, especially the relative position of the vagina and tumor will be of some help. As described above, a sound passed into the elongated vagina from below and palpated in the abdomen will be of considerable aid.

The troubles of the operator depend not only upon the question of orientation but even more upon the complicated attachments and immobility of the tumor and uterus. If the ordinary pulling from above upon the tumor is not sufficient, at times the hand of an assistant in the vagina pushing from below will enable the operator to raise the tumor enough to gain access to the uterine arteries and vagina. However, in a majority of the large cervical fibroids the growth is so firmly fixed that approach to the base of the tumor must be attained by some operative maneuver which frees the tumor from its attachments.

The classical method of approaching these tumors consists, after ligating the ovarian vessels and round ligaments upon the side most easily approached, in opening the peritoneum, pulling the tumor forcibly to the opposite side and then securing the uterine artery, cutting across the vagina or cervix, catching the opposite uterine vessels and enucleating the tumor from below upward.

When it is possible, after the usual freeing of the peritoneum or bladder, to open the vagina at its junction with the cervix, it is often possible to do the hysterectomy and enucleation from below upward after the method of the Doyen hysterectomy. The principle of this method, which is a panhysterectomy, can be applied most frequently to anterior or posterior tumors. When the tumor lies behind the cervix the vagina will be reached by a subvesical approach after freeing the bladder from the anterior surface of the uterus and tumor. When the tumor is subvesical the vagina is reached from behind. In either case when the vagina is opened and the vessel secured the enucleation is continued from below by keeping close to the tumor. Kelly(10) has modified the operation and in suitable cases cuts across the cervix instead of the vagina and enucleates from below as in the above method.

Kelly's(10) method of bisecting the uterus and tumor and enucleating each half from below, or Morison's(6) modification of

bisecting the uterus as far as the tumor and then enucleating the tumor in one piece, are often valuable. Morison reports thirty cases so operated and says the procedure is comparatively easy. The method of enucleating with or without bisection of the uterus is certainly attractive. However, there are not a few cases that do not tend to separate and cannot be enucleated at all.

Another method which has been applied in these cases consists in cutting a huge wedge from the top of the tumor and thus gaining room for further procedure.

Occasionally a globular tumor can be rotated sufficiently in the pelvic cavity to furnish access to one or both uterine arteries.

The general principle of keeping close to the tumor is always necessary if one would avoid injury of important structures, especially of the ureters. Old adhesions in the subperitoneal tissues will often necessitate even cutting through tumor tissue to avoid danger, and even then one may find the ureters imbedded in the tumor itself.

Hysterectomy is usually necessary after the enucleation of these large tumors because of the great distortion and degeneration of organs. Mayo(11) reports a case in which, after removing a large cervical fibroid by transverse section of the cervix, he sewed the body of the uterus to the stump of the cervix with a satisfactory result.

The cavity left after removing these tumors may often have to be packed and drained by the vaginal or abdominal incision. Green(12) advocates stopping the bleeding, obliterating the dead space with catgut sutures and closing the abdomen without drainage. In this connection I wish to repeat Haultain's(2) warning that this cavity is often liable to be infected when a large posterior tumor has caused much atrophy of the rectal wall. He suggests that it is better in these cases to cut through the tumor tissue, leaving some of it attached to the rectum rather than to enucleate, for even if the rectum is not actually torn during the enucleation, the infection may readily pass through the atrophied rectal wall.

CONCLUSION.

1. Fibroid tumors of the cervix have not received the attention that their importance deserves.

2. Among the fibroid growths of the cervix the large subperitoneal variety is most important.

3. These tumors belong in a class by themselves because of the great technical difficulties of their removal.

4. The difficulties of removal are due to the obliteration of landmarks and the immobility of the tumors rather than to any physical characteristics.

5. Fibroid tumors of the cervix are found in about 5 per cent. of all women who have uterine fibroids.

6. These tumors arise somewhat more commonly on the back than on the front of the cervix.

7. Cervical fibroids are more likely than tumors of the uterine body to obstruct the birth canal.

8. Small anterior cervical fibroids projecting into the base of the bladder may simulate almost exactly the male prostate.

9. The enormous distortion of the bladder is a most constant and striking feature.

10. The vagina, rectum, sigmoid and ureters are often greatly elevated and displaced.

11. Marked pressure, atrophy of the vagina and rectum is common.

12. A preoperative diagnosis of the relations of the tumor in the pelvis, and especially to the vagina, is important.

13. The operative treatment is radical, rarely palliative.

14. The operative removal requires the employment of some special operative maneuvers.

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DISCUSSION.

DR. ASA B. DAVIS, New York City.—I have seen comparatively few patients who had fibroid tumors which were limited to the uterine cervix. A number of such cases demanding delivery by Cesarean section have, however, occurred in the service of the Lying-in Hospital in New York. In this connection, there occurred one case which is quite instructive. February 5, 1908, Mrs. B. was brought to my division, in active labor which had been in progress many hours. She had previously given birth to three large full-term children without difficulty. A large fibroid tumor was found filling the upper part of the pelvis and extending to the uterine fundus. A full term living child was found occupying the right side of the uterus with the vertex in the right iliac fossa. I performed Cesarean section without delay resulting in a living child and an uneventful puerperium. Believing that Cesarean section is quite enough of an operation for one sitting unless the immediate condition of the patient demands more, this patient was not sterilized and hysterectomy was postponed until involution of the uterus had taken place and decreased vascularity should have diminished the size of the tumor. This patient was an intelligent Irish woman. The condition was explained to her and she promised to return in a month to have the fibroid removed. She failed to return and she was lost trace of until about two and a half years later when she again entered the hospital, pregnant, six weeks from term, having moderate uterine bleeding and uterine contractions. My house surgeon who examined her upon admission assured me that the pelvis was so filled with a fibroid tumor that it would not allow a four month's fetus to pass. Knowing her condition in the previous delivery and being anxious to check premature labor, I did not examine here at this time. She was placed in bed and with the aid of morphine and codeine, uterine contractions ceased in a few hours. The bleeding stopped in about thirty-six hours. In order to develop a mature fetus the woman willingly remained in bed until ten days before term when her condition was so good that she was allowed to leave her bed and go about at will. There was no return of her symptoms until term. She was walking about the ward, when her membranes ruptured suddenly. She was hurried to bed and in a few minutes delivered herself of a lusty full-term child per vias naturales. This might make it seem that

the Cesarean section two or more years before had been unnecessary. I take it, however, that the recumbent position in bed had relieved much of the pressure upon the tumor, resulting in considerable diminution in its size from the disappearance of its edema, and allowing it to take up its position largely outside of the pelvis and in that way making room for the passage of the child.

DR. RUFUS B. HALL, Cincinnati.—I am very glad that the essayist presented this subject, as it is such an excellent review of the literature. His remarks on the treatment and pathology of the cases were very interesting. I have encountered quite a number of fibroid tumors developing below the peritoneum from some portion of the uterus, subperitoneal, and I will speak of those which are only large enough to fill the true pelvis and extend somewhat into the abdomen. Not all of these tumors are difficult to remove from a surgical standpoint, but a certain percentage of them are difficult. Let us take a patient who has had repeated attacks of inflammation plus the tumor and adhesions, or if the condition is complicated, as it is not infrequently by pus tubes, you have the complications spoken of by the author of the paper; then the anatomical relation is distorted, but the surgeon need not become confused, if he uses his surgical knowledge properly and the ideas expressed by the author. He may decide to do a hysterectomy in the place of a myomectomy, and I believe in this class of cases we should do a hysterectomy, and not a myomectomy, because there is so much trauma likely to be done in the pelvis, which adds additional risk to the life of the patient. A large percentage of these women who present themselves with these tumors are forty years of age or thereabouts, and you do not take away many years of menstrual life from them by doing a hysterectomy. On the contrary, you add many chances for them to get well. If you select hysterectomy, one should cut off the blood supply, as first suggested by me in 1897, a report of which may be found in the Southern Surgical and Gynecological Association of that year. If the tumor is in the patient's right side, ligate the ovarian artery on that side, next ligate the ovarian artery on the left side, cut across the broad ligament, push the bladder down, ligate the uterine artery on the left side and cut across the cervix. It is often difficult to locate and ligate the artery on the tumor side, and it is not always possible to do so, because the tumor is wedged down in the pelvis, as you have not lifted it out of the pelvis, and it is not always possible to do it. In place of wasting a lot of time in searching for the artery, I cut across the cervix until I cut the artery then pick it up with the forceps. The patient does not lose much blood, and you can go on with the enucleation. The only structure you are in danger of wounding is the ureter on that side. That can always be avoided by clinging close to the tumor and pushing the ureter out of the way little by little as you proceed. If one exercises due care he will very seldom tear across the ure-

ter. Only on two or three occasions I found the ureter on top of these tumors. I reported a case fifteen years ago where the ureter was on top of the tumor, dilated as large as a man's thumb, with an immense hydronephrosis on that side. I saved the ureter in that case, and the patient is still alive. But in those cases in which you do not recognize the ureter, there is danger of wounding or cutting it, unless one hugs the tumor in enucleating it. If you can recognize it and push it aside, the patient is all right. If you do not recognize it, by sticking close to the tumor, and by lifting on the tumor, you can enucleate it without injuring the ureter or any great loss of blood. The difficult cases are trying to the operator, but when a man knows that he has hemorrhage under control by this method he can take his time and carry out every detail of the enucleation. But if he tries to enucleate the tumor without cutting off the blood supply, he will do injury to the ureter and thus subject his patient to greater risk. If the patient is put in the Trendelenburg position, the operation is performed before his eyes, it is lesss difficult to do, although it must always be considered a serious operation for the patient.

DR. FRANCIS REDER, St. Louis.—At the Baltimore meeting of this association I presented a tumor a little larger than the size of a child's head. It was a cervical fibroma. These tumors sometimes present difficulties in diagnosis, and I was glad to hear the doctor say that orientation means a great deal to the surgeon who attacks these tumors. These tumors grow retroperitoneally, and often attain such size that they can be palpated through the abdominal wall. The first impulse the surgeon receives is to attack these large tumors through an abdominal incision. I do not believe that this type of tumor should be attacked through an abdominal incision if there is a possibility of removing it per vaginam. Not because the surgeon is confronted with difficulties that are almost insurmountable, but because of the surgical cleanliness of the vagina which it is impossible to obtain when dealing with this kind of a tumor. You have, for instance, a vaginitis, a discharge from the vaginal surfaces that may harbor infectious material of a most harmful nature. These surfaces cannot be reached and rendered sufficiently clean to warrant the surgeon to remove such a tumor through an abdominal incision without exposing his patient to a great risk. These tumors have a fibrous capsule and the surgeon can render his work extremely difficult by improperly attacking these growths. If there is not sufficient room at the vaginal introitus to attack the growth, lateral incisions so placed as not to injure the rectum will help him very materially. After splitting the capsule he can have recourse to morcellement and thereby lessen the size of the tumor. The blades of an obstetric forceps placed about the tumor is often a great help in making the ablation of such a growth less difficult. I have, since reporting this case, had two of these tumors. I speak of them as tumors because they were sufficiently

large to be called tumors. One was the size of an orange, the other a little larger. Both these tumors I removed without any difficulty through the vagina. I again wish to emphasize that on account of the great difficulty to get the vaginal canal surgically clean these tumors should not be removed by the abdominal route if it is possible to remove them per vaginam. The risk of infection is very great.

DR. ALBERT VANDER VEER, Albany.—I am very much interested in this subject. In 1867, 1868 and in 1869, fibroid tumors were classed among the surgical lesions to be let alone, and all our efforts were made in the direction of trying to understand somewhat better the location of these tumors and what we might do for them. I remember very well in 1867 and in 1868 going over to Boston and seeing Dr. Cutter treat cases with his cautery battery. In a case that came under my observation in 1869, which was reported in the transactions of the Medical Society of the State of New York for that year, it was one of posterior cervical fibroid. The case seemed very plain to me that we could remove it through the vagina, and I prepared the patient, not with the extreme care and caution that we do now regarding the technic of the operation, and split the posterior wall of the vagina, getting through very well without much hemorrhage. I found I had to deal with a fibroid tumor about the size of a goose egg, which was not easily delivered. It occurred to me that I might make use of some of my obstetrical experience, and accordingly I took a small forceps and applied it and removed the fibroid successfully in that way. Dr. Sims, who attended the next meeting of the Medical Society of the State of New York, was interested in the procedure, and I felt that the patient made such a good recovery we had perhaps here an operation which we could do more frequently on patients suffering from fibroid tumors. But these cases are not very frequent in their presentation. We do not meet with these cases very often. About two years later I encountered a similar case, and in that I succeeded in its removal in the same way. Then other surgeons began to suggest attacking these tumors through the abdomen, and as we are now more familiar with that route this operation is more frequently done than the vaginal, and I can only recall to mind four cases during my entire practice in which I found it desirable to remove a fibroid tumor through the vagina in some such way as has been suggested in this very able paper. I must say, however, that I feel easier in attacking such a tumor through the abdomen, although it may be situated low down. I feel that I can protect the ureters better from above than I can in working below, and it is a decidedly easier operation by having the patient in a good Trendelenburg position, with a good light. Nowadays I rarely attack these tumors by the vaginal route.

What Dr. Hall has said in regard to the control of hemorrhage is very appropriate, and yet it has occurred to me within the past year or so that in attacking a fibroid tumor situated low down,

it is our duty to preserve the uterus, if it is possible to do so, and there are cases where myomectomy has its proper place, and it should be followed out. On the other hand, this operation of making a transverse incision through the anterior wall of the uterus, just behind the neck of the bladder, and lifting the bladder well up, as is done for vaginal Cesarean section, and so on, might be made use of in removing some of these fibroid tumors situated low down. We might make more use of that method than we think possible at this time, and this paper reminds me of some of the possibilities in that direction. I do not wish to dilate upon the great progress that has been made, but when I look back and remember when we considered these fibroid tumors impossible of reach, and then listen to such a paper as this and then remember what is being done at the present time, I feel profoundly thankful that I lived through the period when the evolution of surgery has brought us to such a degree of excellence as portrayed in this paper at the present time, showing us what the men in this association are thinking and doing.

DR. WALTER B. DORSETT, St. Louis.—Inasmuch as I did not hear the reading of the paper, I do not know whether it is appropriate to make any remarks on it or not. However, I caught the drift of the discussion. Recently I read a paper on my personal experience in 140 consecutive cases of operations for fibroid tumors of the uterus, and of this number in five I did vaginal myomectomy. I have been of the opinion that we have gotten away from what the Germans taught us for a little while, namely, of attacking these tumors through the culdesac of Douglas. I read a paper some time ago along this line, and I was attacked by a man who had been over to Vienna and who had seen a good deal of vaginal work done there, for advocating the abdominal route in most all cases. This man went so far as to say it was perfectly wonderful what one could see and do and have control of the situation when he made a large incision in the culdesac of Douglas. Shortly after that Professor Wertheim visited St. Louis, and I happened to have a case in which the fibroid tumor grew on the posterior wall of the uterus, or rather it was an intramural fibroid, projecting into the culdesac of Douglas, and I said this was a good chance to see the Wertheim operation. The patient was put on the table, and it took Professor Wertheim two hours to remove that tumor by morcellation, and I dare say that the merest tyro could have taken the uterus out in one-half the time. I had other cases of fibroid tumors in the hospital at the same time on which I had done abdominal hysterectomy, and abdominal myomectomy, and those patients recovered in one-half the time that this patient did who was operated on by Professor Wertheim. This patient became septic, although every care was taken to guard against it, and she had a long continued morbidity. I have removed fibroid tumors with the obstetrical forceps in an old maiden lady who came to the Female Hospital. In this case I had to cut down through the fourchette to apply

my obstetric forceps. In this case the tumor grew from the interior of the cavity of the uterus; it was pulled down, ligated, and easily removed. She made a good recovery.

I have had experience in fibroids complicating pregnancy, and in the pregnant woman these tumors grow enormously, and sometimes it looks as if we would have to operate. I remember one case in particular in which a patient was placed on the table for a myomectomy; we knew she was pregnant; she had been married seven years, and had never had a child. It was situated behind the promontory of the sacrum and was wedging the pregnant uterus in the pelvis. When I opened the abdomen and lifted the uterus out of the pelvis I was afraid to remove the tumor because I did not know how deep it went into the cavity of the uterus. I did not know but what it went clear down to the mucous membrane, so I was rather afraid to remove it. I lifted it out of the pelvis into the abdominal cavity; she had no complications. She went on to term and I delivered her. Three years ago the operation was done. I examined her about six months ago and found that the tumor was not as large as a walnut, and probably will not have to be removed. In those cases in which the tumors are complicated by pregnancy I think we ought to be slow in operating. I know that Dr. Zinke will take the position that where they are located low down in the anterior wall between the bladder and the uterus, they are very liable to complicate pregnancy; that forceps cannot be applied, and that these cases are eminently suitable for vaginal Cesarean section or for abdominal section and he is right. It depends on the location of the growth.

Dr. E. Gustav Zinke, Cincinnati.—So far as the complication of pregnancy by fibroid tumors is concerned, I think the general consensus of opinion of the obstetricians of to-day is to let them alone, no matter where the tumor or tumors may be located. When the period of labor has arrived you are to be guided by the conditions existing at that time. We now know that, in a great many cases, fibroid tumors undergo serous degeneration. A fibroid tumor the size of a fetal head may entirely disappear after labor, in consequence of the changes in the uterus during gestation. It is only a few years ago when every case of fibroid tumor of the uterus, complicating a pregnancy, was considered a case for hysterectomy or myomectomy either before or at the time of labor. Not so to-day. A fibroid tumor may be situated low down, such as the essayist spoke of, below the pelvic peritoneum, and yet may not be affected in any manner by the progress of gestation. I have seen one such case. The patient was six months advanced in pregnancy, and the tumor did not move into the abdominal cavity. The tumor was so large as to fill the pelvic cavity completely. It was too large to attempt its removal through the vagina and when we opened the abdomen it was at once evident that a supravaginal hysterectomy was necessary to enable me to extirpate the subperitoneo-pelvic growth. It is the

interstitial fibroid tumor which is affected most favorably by pregnancy. The submucous and subperitoneal varieties are similarly affected, but not to the same extent, especially if they are pedunculated. In the case just mentioned, the tumor had no longer had any connection with the uterus, and that explains why it showed no serious degeneration. We know that even some of the submucous fibroid tumors of the uterus do not interfere with the progress of pregnancy, and that many of these patients go to the end of term. The principal point is this: All fibroid tumors of the uterus, interstitial and sessile in character, will be considerably softened by pregnancy, but the pedunculated variety are not affected to the same extent, and the smaller the pedicle the less softening in consequence of the gestation.

DR. JOHN W. KEEFE, Providence.—I would like to call attention to two or three points in connection with this subject, and one is that we should not be in too much of a hurry to advise the removal of these tumors in cases of pregnancy. I can report an instance where two men, who made a specialty of gynecology, advised producing premature labor on account of two fibroids that could be felt *per vaginam*, and who said it was impossible for the child to be born. This woman was placed in the hospital toward the close of her period; one day labor set in, and she had a perfectly normal delivery, with no interference whatever from the fibroids.

With reference to looking out for the ureters, I think this can be accomplished in some instances by catheterizing them. We know that can be done much more readily to-day than formerly; that there are many men to-day who are more expert in the catheterizing of the ureters than was the case some ten years ago, and it is a great satisfaction to be able to feel the ureters while operating through the abdomen. Undoubtedly there are many cases where the uterus can be safely removed with the fibroids without catheterizing the ureters. But there is a certain number of cases where this is of great assistance, and it should be employed more often in the future than it has been in the past. I have heard many practitioners say that they did not cut the ureters, but we read of ureteral fistulæ. Somebody must have cut them or we would not have these fistulæ.

With regard to removing these tumors through the abdominal incision, I was much impressed at one time, after a visit to Paris, to find how dexterous these French surgeons were in removing these tumors *per vaginam;* they are much more expert than most of the men we see in this country who remove tumors by that route. Personally, I have removed a number of these tumors by morcellement, but I find it much more difficult to do so than to operate through the abdominal wound, and I think most surgeons in this country find it easier for them to remove these tumors through an abdominal incision. Whichever way best suits the individual operator, that is of course the way he should perform these operations.

DR. HUGO O. PANTZER, Indianapolis.—I am gratified with the emphasis which the essayist has placed on the importance of outlining these tumors topographically before operation. In many instances the attitude of the operator and his course of operating will be greatly influenced by such finding. I wish to add this one point, that in many of these cases the presence of irritability of the bladder is indicative of ureteral displacement, and should forewarn the operator.

DR. H. W. LONGYEAR, Detroit.—It seems to me there should be more emphasis placed upon the fact that gestation softens these tumors. I do not think that point has been dwelt on sufficiently in the literature in the past. I believe many of them soften very materially and that labor is allowed to go on in consequence thereof. I had one such experience as that in which a tumor was situated in the anterior wall of the uterus close to the neck, behind the bladder, and I thought it was going to give serious trouble. It did in one way. The woman aborted between the fifth and sixth month, and the tumor followed the expulsion of the contents of the uterus, and I was very much impressed with the appearance of it. It no longer looked like a fibroid tumor. It had a fleshy consistency and was more like firm muscular structure. I have no doubt that if the pregnancy had gone on the tumor would have become so soft that it would not have interfered with labor.

DR. SMEAD (closing).—In reading my paper to you this afternoon I did not read the paragraph dealing with the vaginal removal of these tumors because I had in mind to emphasize the large and complicated cases of subperitoneal fibroid tumors of the cervix. The paragraph is in the paper, however, and in it I advocate the removal of the small and moderate sized tumors by way of the vagina. In the case of the larger tumors, however, I much prefer to make the attack through an abdominal incision. I believe the chance of infections is thus lessened and one is in a better position to control any serious hemorrhage such as I have seen when attacking there tumors through the vagina.

In covering the literature upon this subject I read of a case which attracted my attention. The operator in advocating the enucleation of these large fibroid tumors said the procedure was comparatively easy, but went right on to describe a case in which he was compelled to make pressure upon the abdominal aorta in order to stop an enormous hemorrhage which followed immediately upon the enucleation of the tumor.

The idea of having a catheter in the ureters during the operation has been brought up by one of the speakers. Unfortunately, however, it is applicable in only the simpler cases, for you all know the difficulty of catheterizing a ureter which is kinked. In fact a slight kinking of the ureter is often an absolute block to the passing of a ureteral catheter.

EARLY DIAGNOSIS OF ECTOPIC PREGNANCY.

BY
R. R. HUGGINS, M. D.,
Pittsburg, Pa.

LAWSON TAIT as late as 1889 declared that "he doubted whether a case of extrauterine pregnancy had ever been diagnosed previous to rupture."

On the very next page of his text-book he says, "But the very fact to which I have drawn attention, that a large proportion of these victims (a very large majority in my own experience) are either women who have never borne children, or who have not been pregnant for many years, shows how misleading the whole history may be. Continuing, I must point out, however, that Petit was right to a very large extent but not uniformly so when he said in 1710 that the menses, contrary to what is seen in a normal gestation, continue to appear throughout the pregnancy."

Thus, while recognizing the frequency of these factors in the history, he failed to give them sufficient importance. Observations and careful analysis of the histories of many patients as are being constantly reported, teach us that the symptoms referred to are of great diagnostic value.

The writer believes that the time has arrived when the diagnosis should be made previous to the final rupture and collapse, in at least 80 per cent. of the cases, providing the physician is called. Unfortunately the physician is not always called, but in our experience the patients have consulted physicians on account of unusual pelvic symptoms during the early part of the illness, and before the final stage of collapse in more than 70 per cent. of the cases.

This shows clearly that many of these patients consulted physicians early, and that an opportunity to diagnose and advise treatment is offered when the danger is practically nil.

One of the most important factors in its early recognition is the careful study of the patient's history, not for a month, but for a number of years previous to the development of symptoms suspicious in character. By careful inquiry a history suggesting some previous tubal infection will be found in the great majority

of cases. The patient may have been pregnant soon after marriage six or eight years before, but not since. She may and probably will give a clear history of pelvic disturbance at some time during the past; in some instances severe, in others of such mild character that they may be overlooked. A period of sterility is strong evidence in favor of previous disease of the Fallopian tubes. It is true that all patients do not give a definite history of tubal disease, but that many do was recognized and commented upon by the earliest investigators. A careful study of the menstrual history is equally important. The exact date of its appearance, its duration, and character of flow should be carefully investigated. If the habit has been perfectly regular, any delay or irregularity in the presence of other unusual symptoms is sufficient to bring to mind the possibility of ectopic gestation.

When a woman whose menstrual period has been regular, misses or goes beyond her time for menstruation she will suspect pregnancy. If a flow from the vagina begins in a period varying from four or five days to three weeks after the regular time, continuing more or less regularly, accompanied by pains periodic in character located in the hypogastrium or on either side, extrauterine pregnancy should at once be suspected by the physician, unless some other well defined condition is present to account for it. The vaginal hemorrhage may be dark-colored blood, coagulated at times; at others a blood-tinged leukorrhea, or in some instances, bright red. It is sometimes described by the patient as being different from the normal menstrual flow, and is therefore atypical. This hemorrhage is doubtless due to a partial separation of the ovum from its cyst wall, or to the separation of the decidua from the uterus.

The pains are due to the attempt of the tube to expel the ovum or escaped blood, which act as foreign bodies. There may be a number of severe attacks of pain lasting over a period of several weeks before the final rupture occurs. It is not infrequent that considerable blood escapes into the abdomen during these attacks, but not sufficient to produce serious symptoms. There are undoubtedly many instances where the ovum escapes into the abdominal cavity with but moderate hemorrhage, becomes destroyed, and the woman recovers.

In reviewing modern text-books it is apparent that sufficient stress is not laid upon definite signs, but that too often the attention of the reader is called to the general signs of

pregnancy, such as absence of the menstruation, breast signs, etc., which are indeed seldom present, especially early in the history of the case. In thus directing attention to these general symptoms as prominent features in the diagnosis, the student or practitioner is liable to misinterpret the local or pelvic signs when unaccompanied by other well-known evidences of pregnancy. Instead of suspecting ectopic gestation, which, in the presence of above symptoms is the condition most likely to be found, he looks for something else.

In 95 per cent. of the cases of ectopic pregnancy seen by the writer, the history and local symptoms have overshadowed all others, and seldom in the early weeks have the usual general signs of pregnancy been present. It is true that this does not occur in every instance. In some cases there is no history of either pain or hemorrhage or flow of any kind, the first symptom being that of sudden severe pain and collapse. Careful study of the histories in fifty-two cases which had gone on to rupture in my own experience, showed that in all but five there had been some irregularity of the normal flow and pain before the final rupture and collapse.

The local signs elicited by pelvic examination are not always as satisfactory as might be desired. The softening of the cervix is not so marked as in normal pregnancy; the uterus is enlarged, but not to the same degree. Unless the abdominal wall is very thick, the enlarged tube which is extremely tender on pressure, can be readily palpated. Traction upon the cervix usually produces great pain, and that sign, if present, taken into consideration with the other symptoms above referred to, makes diagnosis doubly certain.

Few conditions of the pelvic organs produce symptoms similar to the above.

Abortion seems to be frequently suspected in the presence of the above symptoms. A careful history, and the absence of tenderness on either side of the uterus, will usually eliminate the possibility of this condition. We do not find severe pains in abortion during the first six weeks of pregnancy unless thereis some complication present. Abortion, in the presence of inflammatory disease of the adnexa, with adhesions, can no doubt be misleading. Few cases of ectopic gestation occur in the presence of acute infection of the tubes.

Salpingitis or pelvic peritonitis is seldom attended by such symptoms as those described, but in some instances it may be

difficult to differentiate between the two. Careful study of the history will serve as an aid. The menstrual flow is not delayed in the presence of inflammatory lesions, but is usually earlier than in customary health. The study of the temperature chart and a careful blood count are also aids of considerable importance. An enlarged tube from ectopic pregnancy, and a tube swollen from infection with its surrounding exudate, palpated in the same position give such different sensations that it is difficult to see how this mistake can often occur.

In those cases of intrauterine pregnancy which are accompanied by hemorrhages, the absence of severe pain or colic, also the absence of pain at either side of the uterus, are important factors in the differential diagnosis. Oftentimes the pathologist can be of great assistance if he is able to determine the presence or absence of decidual cells by examination of the uterine scrapings.

Finally, in the presence of strong presumptive symptoms we can eliminate doubt by opening the culdesac and thus immediately establish a diagnosis with but little risk to the patient.

In this brief review it has been the endeavor of the writer to emphasize a few points which are important in the early diagnosis of this condition, and if possible to arrange them in such a way that the presumptive evidence will stand clearly before us as a mental picture of this dangerous accident.

While diagnosis is difficult or even impossible in some cases, yet it is necessary, in the light of our present knowledge, for the physician to be on his guard in the presence of the above described danger signals, and give them due consideration.

It is the duty of the men who see a considerable number of these cases yearly to help students and the general practitioner by a more careful elucidation of diagnostic symptoms in the early stage.

It has required years to teach us that many diseases of the abdominal organs are accompanied by symptoms which are more or less distinctive. The signs which lead us at the present time to the early diagnosis of lesions in the gall-bladder, kidney, or appendix are almost generally recognized. This advance is due to a proper classification of the more prominent symptoms, greater skill in the use of the hands in palpation, and a careful review of the patient's history. A proper expenditure of the same amount of skill in the study of the patient presenting presumptive evidences of ectopic gestation, will be rewarded with success nine times out of ten, long before the final rupture occurs.

I beg to submit the histories of fourteen cases where the diagnosis was made and operation performed previous to the time of rupture.

CASE I.—Gyn. No. 2680. Referred by Dr. Marshall. Mrs. W., aged twenty-two, married, a housewife, had had no labors but one miscarriage. Father died with cancer of the stomach. Mother, two sisters and a brother were living and well. The patient had had the usual diseases of childhood.

Menstruation began at the age of fourteen, and was always regular and normal, flow lasting four or five days until marriage three years ago. Since that time has been painful the first forty-eight hours and the flow has been more profuse.

Patient was admitted to the hospital July 16, 1908, and gave the following history of her condition: Menstruation had been regular for the past year; was normal in April, her period was due in May, on the fifteenth, but did not appear until the twenty-third and since that time has continued with more or less irregularity. The color of the flow was not characteristic. At times it was very pale, at others quite dark, and was of sticky consistency. During the past sixteen days patient had had a number of attacks of severe pain in the pelvis. These attacks appeared suddenly, were cramp-like in character, lasting for a few hours, followed by soreness for a day or so, and then the symptoms apparently disappeared. For the past few days the attacks had been more severe and the physician in charge had used morphine to control the paroxysm. There was no nausea, vomiting, nor breast signs. Pulse was normal; temperature, normal.

On physical examination of the pelvis and abdomen, cervix was found normal in size and consistency; body of the uterus, slightly enlarged and enlarged left tube easily palpated; great tenderness when attempt at manipulation of tube was made, also considerable tenderness upon attempt to push vaginal portion of the cervix forward; diameter of the enlarged tube was apparently about one inch.

Diagnosis of ectopic gestation of the left Fallopian tube was made. Operation July 17: Median abdominal incision; removal of enlarged left tube; ovary, cystic and adherent, was also removed. While removing the tube it ruptured, revealing the presence of an ovum of six weeks. Right tube and ovary were normal. Patient was discharged from the hospital on the fourteenth day.

CASE II.—Gyn. No. 2481. Referred by Dr. Nealon. Mrs. M., aged forty, married, a housewife, had had two labors. Second child was nine months of age. She has had no miscarriage. Family history negative. General previous history: Usual diseases of childhood; health has always been good.

Menstruation began at the age of thirteen and has been very regular all her life; flow lasted from four to five days; more profuse during the last five years. She was free from pain during this period until first baby was born, four years ago. Since that time has had considerable trouble in the left ovarian region, which was increased during the menstrual flow and upon extra exertion. Otherwise, patient seemed normal. Menstrual periods had been regular since the birth of the second child. The last normal period had begun May 28 at the usual date. In June the flow did not occur at the regular time. Nine days later, however, a flow began which lasted a few days and ceased. She had some pelvic distress at intervals which was not severe until July 16, when an attack of severe pain occurred, which lasted several hours. Several times during the following three days the pain was quite severe. On Sunday morning, July 19, she was seized with such severe pain that her physician was called who gave her morphine and also made the diagnosis of an ectopic gestation. The diagnosis was based upon three facts: Absence of flow at the correct time, followed by attacks of severe pain in the pelvis, together with an extreme sensitiveness in the left tubal region; no elevation of temperature, and pulse normal. These symptoms were sufficient to lead him to the presumption of ectopic pregnancy.

Examination by the writer verified the above symptoms. In addition the enlarged tube could be easily palpated as well as an adherent ovary. It may be said that an inflammatory condition of the left tube might be associated with the same symptoms. This is doubtless true, but, even if it were, operative treatment would not prove to be a serious error. Patient was admitted to the hospital at once and operated upon the same afternoon. There was a small amount of blood in the culdesac which had escaped during the pain early in the day. The sac, which was located about the middle of the tube, ruptured while the tube was being removed. Patient was discharged on the fourteenth day.

CASE III.—Gyn. No. 2570.—Mrs. S., aged thirty-four, had had three labors and one miscarriage. Family history was negative.

Health had always been good. Her labors had been accompanied by profuse hemorrhages which had been especially severe in her last delivery. Menstruation began at the age of sixteen; has always been very regular, flow lasting about three days and unaccompanied by pain; patient had had backache at intervals and occasionally leukorrhea. There had been at no time any bloody discharge previous to the present trouble. Patient had been well as usual and menstruated regularly and normally in July and August, September and October. Her period was due November 20. It did not appear until five days later and had continued more or less of the time to date of admission, December 13. At that time she complained of no severe pain, but had a sense of fulness in the pelvis; also peculiar shooting pains, not severe but unusual in character. She had been unusually nervous and her husband thought she was acting somewhat queerly and became rather anxious about her mental condition. Patient complained of chilly sensation and some irritability of the bladder. There was no nausea nor vomiting, and no breast signs.

On pelvic examination, cervix was found somewhat softer than usual; no enlargement of the uterus could be detected; the left Fallopian tube was enlarged at the middle portion to the size of thumb. This was easily palpated, owing to a thin relaxed abdominal wall. There was considerable tenderness about the tube and pain on pressure.

Diagnosis of ectopic gestation was based upon the delayed menstrual period following a number of periods which had appeared at the regular time, on the continuous flow from the uterus, the shooting pains and the enlarged tube.

Much consideration was given to the nervous symptoms, which were unusual; also the shooting pains complained of by the patient, and elicited by careful bimanual examination. Owing to the mildness of the symptoms and to the knowledge that we might be mistaken in our diagnosis, it required some tact and considerable effort to induce this patient to enter the hospital for operation. While the symptoms were plain, yet it was impossible to say that an ectopic pregnancy positively existed. Husband of patient was obstinate in the matter, but after assuring him that diagnosis could be established by opening the culdesac, which was practically without danger, he consented.

She entered the hospital and was operated upon December 14. An incision was made in the culdesac which quickly established the diagnosis. The left tube was distended at the

middle portion to the size of a small hickory nut and contained an ovum about five weeks old. Patient made a nice recovery.

CASE IV.—Gyn. No. 2890. Referred by Dr. Nealon. Mrs. M., aged thirty-four, had had one labor and one miscarriage. Family history contains nothing of interest.

Patient had had the usual diseases of childhood; typhoid fever ten years ago. Menstruation began at the age of sixteen; had been regular, flow lasting four or five days, rather free and accompanied by pain. Patient had at intervals some backache and pelvic distress, for which local treatment was received. General appearance was good.

Menstruation was normal in July, August, September, October, and November, and was due December 1, but did not begin until December 10. The flow was more or less continuous until December 28, at which time she was operated upon. Color of flow paler than usual. During month of December patient complained of backache and some pain in the pelvis. This pain was described as spasmodic in character, and was accompanied by an unusual feeling of nervous apprehension. There was some slight nausea; no breast symptoms. On account of these symptoms a physician was consulted, who referred her to me for examination.

Pelvic examination revealed the following: Slight softening of the cervix, the uterus being slightly larger than normal; the left tube was enlarged; it was firm to the touch and very tender; the uterus was pushed over to the right side and not freely movable. Owing to the lack of any symptoms of acute tubal inflammation, and the previous history not pointing to infection, the diagnosis of tubal pregnancy was made.

Operation.—Curetment; puncture of the culdesac. The abdomen was opened, the right tube found enlarged and a large blood clot was expelled through the fimbriated extremity of the tube. The ovum was located at the middle and outer third. Patient recovered.

CASE V.—Gyn. No. 211.—Mrs. S. Admitted July 14, 1910. Complaining of discomfort in lower abdomen and backache. She had been married for ten years and had one child nine years old. No miscarriages.

Menstruation began at the age of fourteen and was regular and normal, except for severe pain for the first twenty-four hours, until time of marriage. Since the birth of child, nine years ago, she has been somewhat irregular. The menstrual periods have been

profuse at times and she has suffered from considerable pain preceding and during the flow. Has also had considerable backache and bearing-down feeling in the pelvis. There has been a constant leukorrhea.

Patient has had usual health during the last year and menstrual periods have been regular, recurring every twenty-eight days. The last menstrual period began June 10, 1910. Patient cannot state whether that was the exact date for the regular monthly flow or not, but remembers that the flow was of shorter duration than had been her habit. Since this time the flow has recurred several times and for the last three weeks there have been several attacks of pain cramp-like in character and at times quite severe. Several attacks have occurred within the last forty-eight hours and it is for this reason that she came to the hospital.

External genitalia normal. Relaxed posterior vaginal wall. Cervix large, somewhat softened and very tender upon traction, but no great amount of fixation present. The body of the uterus is but slightly enlarged and is pushed toward the left side of the pelvis by a mass about the size of a lemon which is located on the right side of the uterus. This mass is movable and extremely tender on bimanual examination. It is not surrounded by exudate and does not give to the finger the same sensation as does a pus tube or new growth. The left adnexa are not palpable. Absence of temperature and the physical signs justify the diagnosis of ectopic pregnancy located in the right tube.

July 21, 1911. Incision in median line; a mass about the size of a small lemon located in the right side of the uterus. Mass brought into wound, tied off with catgut, stump was buried. There was considerable free blood in the abdominal cavity, and a diagnosis of ectopic was made, which was verified later by the finding of an embryo apparently of six weeks duration. Adhesions separated about left tube and ovary, which was otherwise left undisturbed. Appendix bound by adhesions to cecum posteriorly. Adhesions freed and appendix removed in the usual manner. Abdomen then closed with catgut for peritoneum and fascia, and interrupted sutures of silkworm gut for skin and fascia.

July 22, 1911. Patient reacted well; did not vomit. Had to be catheterized. Complains of pain in lower part of abdomen which is slightly distended. August 2, stitches all removed; wound perfectly healed. August 7, patient allowed up on chair. August 11, patient discharged, well.

CASE VI.—Gyn. No. 75. Mrs. M. W. Admitted December 30, 1909.

Menstruation began at age of fifteen, has always been regular except during pregnancy. Patient gave birth to a child four years ago, and since that time has had more or less pelvic disturbance—dysmenorrhea accompanied by bearing down pains. No miscarriages. Patient states that her menstrual periods had recurred regularly for the last two years. The last regular menstrual period ended October 25. In November the flow did not appear at the usual date, but on December 10 (fifteen days after the normal time) a bloody discharge began which was accompanied by some pain. Since that time the pain has grown more severe, and is paroxysmal in character. The flow for the past two weeks has been intermittent.

Bimanual examination reveals the following: cervix slightly softened and extremely tender upon traction. Uterus slightly enlarged and pushed toward the right side of the pelvis.

On the left side of uterus there is a mass about the size of an ordinary lemon, which is extremely tender upon palpation, and movable. Right adnexa normal.

Diagnosis.—Ectopic pregnancy.

Operation.—January 2, 1910. Median incision. Slight amount of bloody fluid in the pelvis. Left tube about 7 cm. in length by 4 cm. in diameter. Tube removed in the usual manner. Ovum not discovered, but sections reveal the presence of decidua. Recovery.

CASE VII.—Gyn. No. 297. Mrs. S. T. Admitted December, 1910, complaining of pain in lower abdomen.

Menstruation began at age of thirteen, always regular, lasting four days. Last regular period October 11. No children. Two miscarriages—one four years ago, and the other two years ago after three months' pregnancy.

Present Illness.—Began November 10, 1910. Had a regular menstrual period; discharge, however, was scanty and ceased early. Patient had no pain. On November 18 patient suddenly began to have bearing-down pains, and after each of the pains passed large clots of blood from the vagina. These pains extended over the whole lower abdomen, but were worse on the left side. Attacks of pain continued every day up to time of admission. No fever, sweats or chills; no urinary disturbances.

Vagina normal; cervix enlarged and softened; extreme tender-

ness about the cervix on bimanual examination. On the left side of the uterus there is a small mass. Body of uterus is slightly enlarged and fixed. There is also considerable tenderness on the right side of the uterus.

Diagnosis.—Ectopic pregnancy.

Operation.—December 18, 1910. Ether anesthesia. Low midline incision. On opening the peritoneum some dark blood and blood clots were seen in the pelvic cavity. Enlarged left tube delivered. Some blood clots were adherent to it in region of fimbriated extremity. Tube was unruptured and about the size of two thumbs. Right tube thickened and adherent. Uterus enlarged and boggy. As it was deemed best to remove diseased right tube, body of uterus was also removed by supravaginal amputation. Right ovary was not removed. Section of tube showed presence of decidua. Recovery.

CASE VIII.—Gyn. No. 268. Mrs. S. Admitted October 21, 1910, complaining of pain in lower abdomen. She had never been very strong. Had the usual diseases of childhood. Scarlet fever at the age of fourteen. No diseases of adult life.

Married eight years; two healthy children—ages seven and five years respectively. Three miscarriages, two of which occurred since last child. Had stinging pain on urination for two weeks previous to onset of present illness.

Menstruation began at the age of fourteen, and has always been regular, periods recurring every twenty-eight days; painful previous to marriage; since that time pain has diminished. Last regular menstrual period September 17.

One week after last period, which was perfectly normal, she noticed pain low down in the abdomen and in the back, worse on the right side. There was no vomiting. Pain has been sharp, severe, and sudden. There has been a dark red discharge from the vagina. Patient has had attacks of weakness, but no shortness of breath or serious symptoms. Appetite good, except three days ago when patient suffered with cramps after eating.

October 21, 1910. Vaginal walls considerably relaxed. Cervix enlarged. No laceration. There is extreme tenderness when traction is made upon the cervix in any direction. Body of uterus is enlarged and pushed toward the left side of the pelvis. Left side of the pelvis contains a mass which consists of an enlarged tube. It is easily outlined, the widest being in the middle and outer portion of the tube. Below the mass and behind the uterus, filling the culdesac of Douglas, is another small mass.

The whole picture is one of unruptured tubal pregnancy. It is important to note the absence of nausea, vomiting, breast signs, and all of the general early symptoms of pregnancy.

Under ether anesthesia a low midline incision was made, and left tube, which was the size of a tennis ball, removed. Blood was coming from fimbriated end. Tube unruptured. On opening tube large blood clot was found, and what seemed to be a portion of the sac. Sections from the wall of the sac show the presence of decidua. Recovery.

CASE IX.—Gyn. No. 327. Mrs. T. B. Age twenty-seven. Admitted from dispensary January 23, 1911. Complaining of cramp in lower abdomen.

She had been in good health until marriage, five and one-half years ago.

Menstruation began at the age of fifteen, was regular, duration five to six days. Some dysmenorrhea at irregular intervals. One child four years old. Two miscarriages, the second one and one-half years ago.

Menstrual periods had been perfectly regular, recurring every twenty-eight days. Period normal in November, 1910. The December period was delayed four days, and began with a steady flow from the vagina accompanied by cramps quite severe in character in the lower part of the abdomen. Since that time flow has continued irregularly, sometimes rather profuse in quantity, but usually quite scant, and dark in color. Patient was seen in dispensary, and referred to the ward.

There is some irritation about the urethra. Perineum has been repaired. Cervix hard, lacerated, enlarged and nodular. Body of the uterus retroposed, enlarged, pushed toward the right, and quite dense, fixed by adhesions. Extreme tenderness on palpation and upon traction on the cervix. Diagnosis of unruptured ectopic gestation, based upon the delayed menstrual period, flow from the vagina continuing throughout the month, and recurring cramps during this time.

Under ether anesthesia uterus was curetted. Incision through posterior vaginal vault for diagnostic purposes. Edges of incision bled so profusely that it could not be determined whether or not any blood came from the peritoneal cavity.

A low midline incision was made, and some free blood found in peritoneal cavity. A hydrosalpinx was found on the right side densely adherent to ovary. These were removed. On the left side about the middle of the tube there was a small

swelling, which was probably one inch from the fimbriated end. The outer end of the tube was perfectly normal; also tube seemed to be normal between this swelling and the uterus. This tube, together with the uterus, was removed by supravaginal amputation. Incision closed in the usual manner. Specimen preserved unopened. A small embryo is visible through the peritoneal coat at a point where marked thinning of the deep structures of the tube is present. Curettings from the uterus show decidual change. Recovery.

CASE X.—Gyn. No. 335. Mrs. N. W., age twenty-five. Admitted February 1, 1911. (Referred by Dr. Vaux.) Complaining of pain in lower abdomen with continuous flow from the vagina.

She had always had good health until present illness. Has been married three years, two children, the second born one year ago. No miscarriages.

Menstruation began at seventeen, was always regular every month up to time of first pregnancy. Duration four days, pain before and during flow, and also considerable between the periods. This has continued throughout married life. No frequency or pain on micturition; no discharge.

Had been regular in menstrual periods previous to November, 1911. Last regular menstrual period was November 25. Missed December, but began to flow about fifteen days later—January 10. This has continued at irregular intervals up to present time. During this period (that is, for the last three or four weeks) there has been more or less pain, cramp-like in character, in lower abdomen. Four days previous to admission pain was quite severe, and her physician, Dr. Vaux, was called. Vomited on two occasions after flow ceased eight days ago, but not since it re-commenced. Pain is still present, and more severe at one time than another.

February 1, 1911. Patient very sensitive when traction is made upon the cervix. Bilateral tear of the cervix; considerable erosion present. Uterus slightly enlarged and retroposed. There is a sense of fulness in the culdesac, which extends toward the right side posterior to the broad ligament. There is also great tenderness over the region on bimanual examination. History and physical signs point toward the presence of an unruptured ectopic gestation.

February 4, 1911. Under ether anesthesia uterus was curetted, and scar tissues and everted mucosa on each side of cervix excised.

A low midline incision revealed some blood in pelvic cavity. Clots found adherent to fimbriated end of right tube. In the middle of the tube was an elongated mass about 4 cm. in length and as thick as a finger, with normal size tube between it and the uterus and fimbriated end. Tube removed. Left ovary enlarged and adherent. Adhesions separated. Sections from tube showed the presence of decidual tissue. Patient developed a postoperative pneumonia, but later made a good recovery.

CASE XI.—Gyn. No. 257. Mrs. B. Z. Admitted October 1, 1910. Complaining of pain in back and lower abdomen.

Had usual diseases of childhood. Typhoid fever seven years ago. Has had five children; one miscarriage.

Menstruation began at the age of fifteen; regular every twenty-four or twenty-five days until present illness; some pain at beginning of flow. Last regular menstrual period ended August 10. The next period, due September 5, was delayed five days, when the flow began, accompanied by more pain than usually experienced. For the past three weeks the pain has continued at intervals; is cramp-like in character, and at times quite severe. There has been some flow at irregular intervals during this time.

Four days previous to admission there was severe pain in the back and abdomen, first on the right and then on the left side. Pain lasted for an hour, when a physician was called who injected medicine. Since that time pain has recurred, but is not so severe. Patient complains of some nausea and poor appetite. No discharge from the vagina in past four days.

Vagina normal. Cervix normal in consistency, but extremely tender upon traction. Uterus normal in size, shape and consistency. On the left side of the uterus there is a small mass about the size of a walnut, which is extremely sensitive to pressure. It is freely movable, and is located in the Fallopian tube. Right adnexa normal.

Diagnosis.—Ectopic pregnancy.

October 1, 1910. Under ether anesthesia low midline incision was made. Some free blood was found oozing from the fimbriated end of the left tube. In the tube was a mass about the size of a large walnut. Tube was free. Right tube and ovary normal. Left tube and ovary removed in the usual manner. On opening the tube the mass was found to consist principally of blood clot, and within this was a small grayish area which proved to be the embryo. Recovery.

CASE XII.—Gyn. No. 340.—Mrs. A. G., age thirty-two. Admitted February 9, 1911. (Referred by Dr. Ambrose.) Complaining of pain in lower right side of abdomen.

Was always healthy up to time of marriage. Has had all the diseases of childhood. Married at the age of seventeen. Two children; no miscarriages. Last pregnancy two years ago. Menstruation began at fourteen, flow not excessive, but accompanied by pain.

Menstrual periods have been regular for past year, last regular period occurring November 25, December period due on the twenty-third, was delayed, and flow began about January 1, since which time it has continued. Complains of pain in the right lower quadrant of abdomen.

February 10, 1911. Laceration of perineum, and relaxation of posterior vaginal wall. Cervix hypertrophied, and quite soft in consistency; great tenderness when cervix is moved in any direction. Uterus slightly enlarged, pushed toward the right side, and fixed in its position. There is a mass on the right side of the uterus, which extends from the uterus to the pelvic wall, and is about 3 or 4 cm. in diameter. Extremely tender over this side. Left adnexa adherent, no particular enlargement. Patient complains of tenderness over region of appendix, tender over both right and left lumbar ganglia.

Diagnosis.—Unruptured ectopic pregnancy located in right tube, chronic salpingitis with adhesions of left tube, chronic appendicitis.

February 11, 1911. Under ether anesthesia a low midline incision was made and free blood found in peritoneal cavity. Examination of the right tube showed an ectopic pregnancy situated in the outer half of tube, size of tube being 3 by 6 cm. There were large clots of blood around fimbriated end, and free in culdesac. Tube was unruptured. Right ovary large, adherent, and cystic. Right tube removed. Cyst in right ovary ruptured, and rent closed with chromic gut. Left tube and ovary showed inflammatory changes with adhesions, and were closely associated with parovarian cyst. Left tube and ovary removed. Appendix removed and abdomen closed in the usual manner. Recovery.

CASE XIII.—Gyn. No. 473.—Mrs. A. U., age thirty-six. Admitted August 3, 1911.

Complaining of pain in right side.

Has had usual diseases of childhood, no diseases of adult life.

Menstruation began at age of fourteen, flow irregular, free in quantity, duration from seven to ten days, always accompanied by severe pain. Has been married seven years, one miscarriage six years ago. Since that time has had leukorrhea. Menstrual periods have been regular. Last regular period occurred June 1. July period delayed six days, when it recurred with severe cramps over the lower abdomen. This flow has continued, and since that date there have been attacks of pain quite severe in character, no steady or continuous pain. During the last ten days pain has been localized in the right lower quadrant of the abdomen, and patient has been confined to bed a considerable part of this time. On the day and night previous to admission patient had several severe attacks, called her physician at night three times in succession. A diagnosis of ectopic gestation was made by her physician, Dr. Hicks.

August 3, 1911. Vagina normal, cervix slightly softened and enlarged and pushed toward the right side of pelvis. There is a small mass about the size of a tennis ball on the left side of the uterus, which is movable and extremely sensitive.

Considerable tenderness over region of appendix.

Diagnosis.—Unruptured ectopic gestation located in the right tube. Chronic appendicitis.

Patient brought to operating-room from ambulance, and prepared for operation. Under ether anesthesia, uterus, from which there was a bloody discharge, was curetted.

The abdomen was opened through a low midline incision, and left tube surrounded by some blood clots was delivered and found to contain a mass, spherical in outline, about 4 cm. in diameter, and located at the distal end of the tube. Distal one-half of tube and fimbriated end normal, as was also the proximal end. Tube unruptured, and several small areas present where wall was thin and dark and rupture seemed imminent. Tube, and also ovary which was hard and fibrous, removed, together with thickened appendix. Abdomen closed in the usual manner. Recovery.

CASE XIV.—Gyn. No. 2465. Mrs. M. B., age twenty-five. Admitted July 25, 1908.

Complaining of pain in left side.

Married twice in seven years. First husband died of tuberculosis—second husband living and well. One child living and well, age six years. No other pregnancies. Is usually well and strong, never any serious illnesses.

Menstruation began at sixteen, never regular, occurring from

four weeks to twelve weeks, duration from five to six days. Periods not painful, flow profuse during first three days. Leukorrheal discharge, profuse, foul, irritating, especially heavy after menses.

Menstrual periods were regular in April and May, none in June; July 5 she menstruated slightly one-half day, one week later flow again appeared, lasted a half day. A week ago she menstruated two days, when all discharge ceased again. That night she had severe, sharp pains in left side, and passed some large, dark clots of blood. Two days later she again had same kind of pains and slight discharge. The pains have continued almost constantly for the last four days.

Vaginal outlet is relaxed. Cervix large and fixed. Patient complains of severe pain when the cervix is moved in any direction. Body of the uterus slightly enlarged and pushed toward the right side. This mass is about the size of a small lemon, is movable and extremely sensitive to the touch. No exudate present in the pelvic cavity. No elevation of temperature.

Diagnosis.—Extrauterine gestation.

Midline incision. Uterus and right adnexa normal. The left tube is enlarged and a slight amount of blood is present in the culdesac, with some escaping from the fimbriated end of the tube. The tube was quite thin at a point near the middle, which later examination showed to be the location of the ovum. Recovery uneventful.

INTERSTITIAL PREGNANCY.

BY

N. STONE SCOTT, M. D.,
Cleveland, Ohio.

(With seven illustrations.)

WHILE the ovum in its descent may lodge and develop in any part of the Fallopian tube, my subject embraces only that portion lying within the walls of the uterus, seven lines in length and one line in diameter. Twenty-five years ago recorded interstitial pregnancies were exceedingly rare. Lawson Tait says, "Up to the year 1890 there were only six specimens of interstitial pregnancy in the English museums; one in the Edinburgh College of Surgeons, one in the museum at Guy's Hospital; one in the museum of the University College Hospital, another in the museum of the College of Surgeons, two in the London Hospital."

An extrauterine pregnancy reported in Paris by Mauriceau in the seventeenth century, Kelly says, may be interstitial. Mauriceau's description of this case is so clear that it will he given to you in his own words:

"History of a woman in whose abdomen there was found, after death, a small fetus about two and one-half inches long, together with a great quantity of coagulated blood. The history of this case deserves to be carefully examined into to decide whether the fetus (as believed by many), was generated in the ejaculatory vessel, called the tube of the womb.

On the sixth of January, 1669, in the village Corrari, I saw in the hands of a chirurgus called Benedict Vassal, a uterus, which the same chirurgus had a short time before removed from the body of a woman aged thirty-two, who died after three whole days of torture with the most agonizing pains in the stomach, through which she had fallen into frequent fainting spells and the most violent convulsions. This woman had borne eleven children at term, but in her twelfth pregnancy, at about two and one-half months the womb dilated in the direction of the right horn, and, unable to stand distention, ruptured."

Schmitt is said to have first made the discovery of interstitial pregnancy in 1801. Breschet followed soon after with a

case, the description of which left a marked impress upon the nomenclature. In 1825 Mayer uses these and two other cases as the basis of a treatise. Pfaff of Leipsic published, in 1826, a work illustrated by plates, showing the pathology, with specimens, of interstitial pregnancy. Within the next sixty years from a dozen to twenty cases only were reported. These few cases, unidentified for the most part until the operating-table or postmortem, form practically the entire literature of the past; and, although the number of reported cases is much greater comparatively in the present than in times past, yet interstitial pregnancies are still noted for their infrequency. This seeming rarity is probably due, in part, to lack of realization of the true condition; as is paralleled in the history of many other diseases, notably that of appendicitis. Then too there exists a confusion of terms which is inimical to accurate observation as well as to definite and logical classification. Most authors refer to interstitial pregnancy as part and parcel of extrauterine pregnancies. Thus Kelly seems to be quite justified in saying:

"Much harm has been done and our progress seriously retarded through the long useless discussion provoked by the unwarranted assertions of some writers that there was but one primitive form of extrauterine pregnancy."

To-day, I take for granted a differentiation of the tubouterine pregnancies from other abnormal forms; and claim that we should recognize certain natural subdivisions within the interstitial class itself. The outcome of tubouterine or interstitial pregnancies is utterly different according to the place of attachment of the impregnated ovum. If this point of lodgment, while within the wall of the uterus, is near enough to the outside of that wall, the distending ovum, following naturally the direction of least resistance, develops toward, and finally ruptures into, the abdominal cavity. If, on the other hand, a pregnancy should remain entirely within the wall of the uterus, perhaps coming to full term, we would be practically forced to the conclusion that it had its beginning in the middle of the uterine wall. When a pregnancy is located within the wall, but so close to the inner boundary that it develops toward the uterine cavity, the result may follow the analogy of the pregnancy situated near the outside of the wall and rupture into the uterine cavity; or it may reach a happier conclusion, develop into the uterus, and continue to full term, being delivered like a uterine pregnancy. Accepting the nomenclature of the authors,

who classify interstitial as one form of extrauterine pregnancy, we could only describe this last mentioned growth into the uterus as a pregnancy which had an interstitial, an abnormal, beginning and a uterine, and normal, termination. In view of these widely differing, developmental tendencies of interstitial pregnancies, the following subdivisions seem to be naturally and properly indicated:

The external interstitial, designating those pregnancies which develop toward the outside of the uterine wall.

The middle interstitial, those which remain quite within the uterine wall.

The internal interstitial, which develop toward the cavity of the uterus.

Most of the cases reported in the literature have been of the external interstitial type. More than fifty years ago Hecker tabulated a score or more of these, all rupturing into the abdominal cavity before the sixth month. Senkler, of St. Paul, saw a patient, six weeks pregnant, who died thirteen hours after the rupture into the abdomen. Hofmeier reports a case that ruptured into the abdomen at the end of the second month. Tytler treated an early interstitial by the immediate suturing of the fissure, and prevented the necessity of hysterectomy. Wallace reports a case rupturing into the abdomen at the end of two months. Johnson operated for fibroids, finding also an interstitial pregnancy. Sturmdorf found the same condition while operating for tuboovarian abscess.

The middle interstitial, that variety in which the ovum remains within the tissue of the wall, is really rare. It is also most difficult, especially in the later stages, to differentiate this pregnancy from a cornual, which is of course uterine. A decision can be reached only by careful study of the anatomy of the tubes and round ligaments with relation to their implantation in the growth. Fortunately the differentiation between these two pregnancies, so unlike in origin and classification, is of little practical importance.

As long ago as 1867, a case, belonging to Dr. Hodge, was reported by Parry under the title "Tubouterine Pregnancy:"

A multipara, thirty-five years of age, begins menstruation while still nursing a year-old babe. Two weeks after she had menstruated the second time, what seemed to her another menstrual period occurred. Evidence that this last discharge was bleeding, not menses, is found in the fact that a little more than

seven months later the fetus was thought by three consulting physicians to be one of about eight months. The obstetrician thereupon ruptured that portion of the wall lying between the cavity of the uterus and the fetus, and, with some assistance, the woman was delivered of a child that lived about ten hours.

A similar report is furnished by Dr. Gilbert: In this case the head of the child could be felt just above the os internum, covered by a thin membrane. Delivery was successfully accomplished by an incision through the partition.

The least to be doubted, most accurately described, and fully illustrated case of this kind is that of Hofmeier:

A II-para, twenty-six years old, last menstruated February 11, 1893. Severe pain began early, continuing until May; then bleeding, which lasted from four to six weeks. Diagnosis of retroflexion was made and a sound passed. Much distress was experienced throughout the pregnancy. December 2, false labor set in; the uterus was explored under narcosis and proved empty. Laparotomy showed a tumor, extending into both broad ligaments, and containing a fetus; in the posterior wall of this sac muscular tissue was demonstrated, while the body of of the uterus lay on the front of the tumor. The uterus was enlarged and distended as at the end of an ordinary pregnancy. The operation consisted in stitching the sac to the abdomen and draining it, after removing the fetus and ovum. Recovery was satisfactory. (See Plates.)

The fourth and only remaining case, I have been able to find that seemed to be of this variety, is one reported by Archibald MacLaren:

Primipara; thirty years of age; last menstruated November, 1897. During the first three months the history was negative; then sudden pain, collapse, nausea, and later a slight hemorrhage from the vagina. After thirteen months the uterus was examined and found to be empty. A median laparotomy demonstrated a thin walled sac closely adherent to the anterior abdominal wall. Muscular fibers were plainly seen in the walls of the sac, after the fetal contents had been removed.

Dr. MacLaren does not, in his description, make it clear that this is not a pregnancy developing in the rudimentary horn of a bicornuate uterus; in fact such a supposition might meet all the requirements of his case.

In all interstitial pregnancies, of necessity the tube must rupture early; the point of rupture, which is apt to be opposite

the placental attachment, determines the direction of the development of the ovum. This fact has a somewhat more practical bearing upon middle interstitial than upon either of the other varieties, because of the resistance of the muscular tissues of the uterine wall. For instance, a rupture at the top of the tube, in a middle interstitial, forces the ovum into the tissue of the fundus of the uterus; while a rupture in the posterior portion of the tube

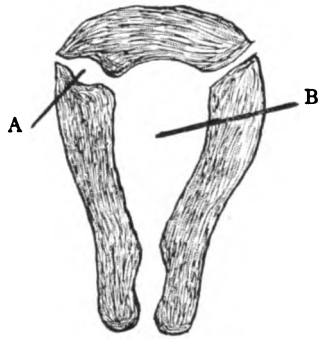

FIG. 1.

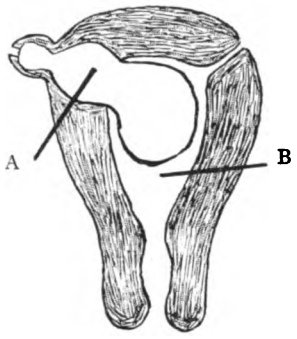

FIG. 2.

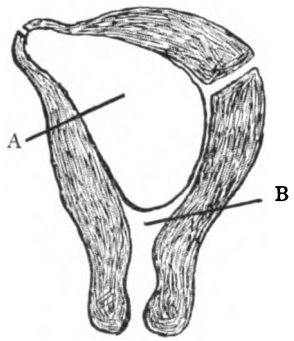

FIG 3.

A. Interstitial Pregnancy. B. Uterine Cavity.

accounts for a case like Hofmeier's, and one on the lower side of the tube prepares the way for Gilbert's case.

The internal interstitial, located near the mouth of the tube, is the variety we naturally expect would find its way into the uterus, whether by development or abortion. Of the former, which begins as interstitial, grows into the uterus and three continues its development, I have been unable to find a single example on record; but, of the variety that aborts, a number of

finely illustrative cases have been reported in the recent literature only.

McBurney, on taking charge of a patient, lately married, two months pregnant, found a mass to the left with the uterus pushed to the right. Leading New York men, called in counsel, also made an examination by passing a sound; the uterus proved to be quite empty. A diagnosis was made of extrauterine pregnancy; it was decided to pass a galvanic current through the fetus. Shortly thereafter the tumor disappeared, the uterus having dilated up to receive the ovum. The membranes were

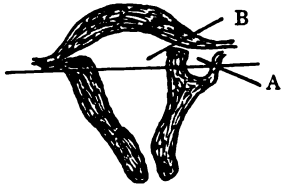

FIG. 4.

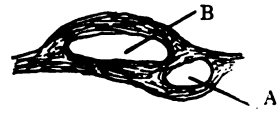

FIG. 5.

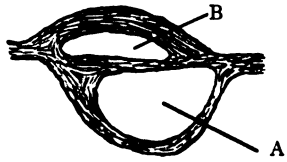

FIG. 6.

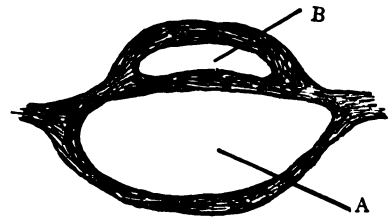

FIG. 7.

A. Interstitial pregnancy; *B*. Uterine Cavity.

very tough; these they ruptured and the abortion ended spontaneously.

Martin removed a male fetus thirty-three centimeters long (six months) from the left uterine cornua. Recovery.

P. C. Williams presents a case of tubal pregnancy, terminating spontaneously per vaginum at the fifth month. Dr. Cornelius Williams, Schwartz and others present similar reports.

May not certain cases, referred to as false perforations of the uterus, in which the sound or curet has suddenly slipped into some unsuspected cavity, prove in reality to be interstitial pregnancies?

DeBovis reports three cases of supposed perforation, in which no lesion was found on opening the abdomen. Heinecke analyzes 160 cases of perforation among which he notes four of so-

called "false perforation," in which the sound was supposed to enter a dilated Fallopian tube.

Twenty years ago my interstitial experience began in a similar manner:

CASE I.—I was cureting, for continued bleeding, a case of the apparently common, incomplete abortion. The uterine cavity had been gone over once and I was repeating the process in order to be certain that nothing was overlooked. The uterus did not seem especially soft; I had explored the left uterine horn and fungus and was carefully scraping the right horn, when much to my surprise I saw the curet suddenly disappear. The operation was stopped at once, while I entertained visions of such sequelæ as abdominal bleeding and septic peritonitis; but nothing of the kind happened, the accident did not even increase the bleeding. Recovery was rapid and uninterrupted.

CASE II.—Mrs. K., aged thirty-two years, was referred to me by Dr. M. J. Parke. She was the mother of a ten-year-old child. Some three years previous she had been curetted for a pernicious vomiting of pregnancy. In the beginning of this, the third pregnancy, the severe vomiting reappeared and was associated with more abdominal pain than had been present during the former pregnancies, so much so that she early called on her family physician, Dr. M. J. Parke, and requested him to do something for her relief. He curetted her but she was no better; she said he had not reached the seat of the trouble. I was then called in counsel. The patient was a large, well developed woman, of a nervous temperament; on careful examination nothing abnormal was discovered, except that the uterus was slightly enlarged. I curetted her, and in view of the fact that this was the second within a few days, especial care was exercised to explore the entire cavity thoroughly and systematically. I found nothing but a little blood. The patient still insisted that she was pregnant, saying that I was no more successful than Dr. Parke. This condition continued for two weeks when after severe cramps an ovum was expelled judged to be of two months duration; it was entire and unruptured. On examination it was easy to demonstrate that the right tube was open, admitting large sized instruments for a depth of three inches. There was no uterine partition or any evidence of a bicornuate uterus. I now recognized this as an interstitial pregnancy. It also caused my mind to revert to the case just reported, of ten years previous, and to reconstruct my

theory, as Irealized the similarity of the two cases, and that this might have been an interstitial pregnancy.

CASE III.—Mrs. B., seen in consultation with Dr. E. E. Brown; a frail woman with no superfluous adipose tissue. She was the mother of a five-year-old child. In the early months of that pregnancy there was much gastric distress, in the latter months severe headache and glycosuria; it was with difficulty that she reached full term. After the confinement, which was tedious and terminated by forceps, the glycosuria disappeared. Some two years later when she again became pregnant, pernicious vomiting developed early with a recurrence of the glycosuria. At two and a half months it was considered unwise to allow the pregnancy to continue, and she was curetted. It was then ascertained that neither bicornuate condition of the uterus nor other anatomical anomaly was present. After three years she became pregnant for the third time; it was then that I was called to terminate the pregnancy, because of the severity of the pernicious vomiting, which occurred early. Examination disclosed a tumor the size of a duck's egg, at the site of the left ovary. The uterus was slightly bulging and irregular in shape, there being a decided enlargement at the left uterine cornua. Under anesthesia it was demonstrated that the uterine cavity was empty, nothing being found but uterine mucosa. On turning the curet toward the left horn, however, it was easily demonstrable that the curet could be passed into the tube, from which some shreds of placental tissue were removed. No force was employed, nor was an effort made to curet out the tubal cavity thoroughly, for fear of perforating the tube into the abdomen. The uterine cavity and the tube were flushed out and an iodine saturated swab passed, not only into the uterine cavity, but into the tube as well. A diagnosis of ovarian tumor and interstitial pregnancy was made, but because of the patulous condition of the mouth of the tube, it was decided not to perform a laparotomy at once, unless her condition should change for the worse. Two days later the remains of the ovum were spontaneously expelled. Another examination showed the cavity much smaller though it was still easy to pass the probe into the tube. After a few weeks the ovarian tumor, which proved to be a dermoid, was removed. While the abdomen was open the tube and uterus were carefully examined; but no abnormality could be found. There was now no trace of the irregularity formerly noted in the shape of the uterus;

the tube also had decreased to its normal size. Convalescence was uneventful.

A recital of the next case, taken from my private practice, should prove of unusual interest. An internal interstitial pregnancy, which early developed into the uterus, and finally terminated with spontaneous delivery and a living child.

CASE IV.—Mrs. S., aged thirty-four years; a thin woman, who had borne four children at term, with uneventful pregnancies and deliveries. She had miscarried twice, once before the confinements and once after; the second miscarriage which had occurred two years before this interstitial pergnancy, had necessitated a curetage, which disclosed an anatomically normal uterus. When she finally came to me, after several weeks of abdominal distress, it was because she had just discovered the uterus above the symphysis. She could not believe herself pregnant, because there had been more or less bleeding about the time for the menstrual period. Examination showed the uterus distended as though about three months pregnant. On the right side of the uterus, in the vicinity of the tube, was a sessile tumor about the size of an English walnut, not movable except with the uterus, but with a decided constriction between it and the uterus. I judged it to be a case of pregnancy complicated by a fibroid. With the development of the uterus during the next month, the tumor grew rapidly, but not as would be expected of a fibroid, since this one increased at the base out of proportion to its growth in other directions. Diagnosis was made of interstitial pregnancy developing into the uterus. (See Charts.) Because of the unusual condition Drs. M. Rosenwasser and H .J. Lee were asked to see the case; they concurred in the diagnosis. By the fourth month the supposed fibroid was merged into an irregularly shaped uterus; a month later no uterine irregularity was apparent. At the confinement the membranes were so exceedingly tough that it was necessary to incise them with sharp scissors before the labor could be completed. Thereupon delivery was spontaneous.

Most of the authors have considered a gonorrheal or a puerperal infection as by far the most frequent cause of all forms of tubal pregnancies. All of the cases of my own occurred in married women, who had been entirely free from such infections; but all had been submitted to prior curetments. It seems reasonable to believe that the cureting was the etiological factor in the production of these interstitial pregnancies.

From a study of the literature and of my own cases, reported to-day, certain facts seem to be more or less fully established.

Interstitial pregnancy is more frequent than has been supposed, even in recent years. Its subdivision into three varieties, not heretofore attempted by the authors, is of more than academic importance.

External interstitial, the only variety observed by the older authors, is a severely dangerous form, and should be treated as is the ordinary extrauterine pregnancy.

Middle interstitial pregnancy continues to be very rare.

Internal interstitial, which has been observed within the past few years only, is more common than dangerous. The tubal abortions of this variety are comparatively frequent. The proportion of internal interstitial developing into normal cases can hardly be gauged by the fact that the single case of that kind reported to-day is the first on record. If possible, an early differential diagnosis should be made between external and internal interstitial, since the latter admits of a more favorable prognosis and less radical treatment.

An interstitial pregnancy is commonly marked by an excess of pain, and, at some time during the early months, bleeding. When such a pregnancy succeeds in reaching the latter months, it will be noted that the membranes are unusually tough.

A small, rapidly growing tumor discovered in the vicinity of either tube, during the first stages of a pregnancy, should be frequently and carefully observed, in order that an interstitial pregnancy be not overlooked.

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DISCUSSION OF THE PAPERS OF DRS. HUGGINS AND SCOTT.

DR. JAMES F. BALDWIN, Columbus.—I have been very much interested in the paper on the early diagnosis of ectopic pregnancy because, by a coincidence, eleven years ago at the meeting of this association held in this city, I read a paper on the same subject, reporting six cases in which I had made the diagnosis before rupture and had operated. At the meeting of the American Medical Association, held in Atlanta, Georgia, in 1896, four years before that, during a discussion in the obstetrical section, I reported five cases in which I had so made the diagnosis, and had so operated. I took the ground taken by the essayist to-day

that the diagnosis could in many cases be made before rupture. At that time no one present had ever made the diagnosis and so operated. Dr. Joseph Price reported one case in which he had made the diagnosis, but rupture occurred that night and he operated the next morning. I quoted in my paper from Tait, as has the essayist. Some one who was at the Altanta meeting was evidently a doubting Thomas about my cases, and so wrote to Dr. N. R. Coleman asking if I was a man of veracity; I think he was assured by the doctor's reply. So far as I know I was the first surgeon to make a diagnosis of unruptured tubal pregnancy, and operate before rupture. Four years later, when I read my paper at our meeting here, several gentlemen were present who had in the intervening years made the diagnosis of ectopic pregnancy and had operated before rupture; and now, as the essayist suggests, I think it is almost a daily occurrence for surgeons to operate on these cases before rupture. The point which I think should be made in this paper, and which I tried to make in my paper eleven years ago, is that the general practitioner needs to be so educated that when he is called to a case of irregular hemorrhage he will not assume that the woman is having an abortion, or that there is an attempt made at abortion. That is where the danger comes. The woman is too frequently, and without any examination, assured that she is trying to abort; her physician does not call in a surgeon, and the result is the golden opportunity of making a diagnosis and of doing an operation is lost. A paper of this sort is not of so much value to specialists, because they do not see these cases early enough as a rule, and we do not have the opportunity of making the early diagnosis; but in the cases in which the surgeon of experience is called early the diagnosis should be made in 90 per cent. of them. Of course there are unusual cases where a diagnosis cannot be made before rupture as the usual symptoms may be entirely lacking.

DR. CHARLES N. SMITH, Toledo.—The chief obstacle to the early diagnosis of extrauterine pregnancy is due to the fact that a patient, who is not suffering continuously or seriously, does not consult a physician until rupture has taken place. If one will listen to the history and analyze it and the local symptoms, as the writer of the paper has said, there can be but little excuse for failure to make a diagnosis prior to rupture. There is a peculiar apprehension which I have noticed on the part of my patients. Patients feel that something is wrong, and they have consulted their physicians not because of the great amount of pain, nor because of a slight pain, but because of this feeling of apprehension that something is wrong in the abdomen. That apprehension arises frequently from a little pain which may be associated with slight nausea and slight faintness, not the fainting of a rupture or the nausea of a rupture, but a slight fainting sensation which suggests that the patient should lie down for a few moments and that seems to provoke, when it is repeated, this

feeling of apprehension which shows that something is wrong in the abdomen.

I have had an experience I want to ask others if they have had, and that is the rather unusual frequency of extrauterine pregnancy in unmarried women who are not prostitutes, nor "kept" women, but who have, I believe, led a good moral sexual life up to the time possibly they became pregnant or a short time before. I have seen a number of these, as many as eight cases in unmarried girls; none of them were prostitutes nor "kept" women. Six of them were seen before rupture, and all were diagnosed, but the diagnosis not given to the family or to the patient, and in six of the eight cases operation was done, and the parents are still ignorant as to the condition found in the abdomen, and four of the patients are also ignorant of the condition which I found in their abdomens. I would like to know if other fellows have found this rather frequent occurrence of extrauterine pregnancy in unmarried women.

I would like to relate briefly one case which shows how little the symptoms may lead one to suspect extrauterine pregnancy. A young married woman, twenty-eight years of age, consulted me about three months ago. She had been married four years. Menstruation was always regular, the menstrual period occurring every twenty-eight days. Four months after marriage she menstruated regularly for fifteen days; after the fourth month of the regular menstrual period, after marriage, she began flowing and flowed for twenty-one days. She was supposed so have an early miscarriage. From that day until I opened her abdomen she complained more or less of pain in her right side, a diagnosis of chronic appendicitis had been made, and she was brought to me for an operation for chronic appendicitis. I could not satisfy myself that there was anything wrong with the appendix, but when examining the tube on that side I found there was something wrong with it. I opened her abdomen a few days afterward, and the tube was practically normal in size. I had obliterated the tube for an inch, and at the end it was adherent to the posterior leaf of the broad ligament; the tube was torn open and was adherent to the broad ligament posteriorly. I believe that my diagnosis, which I mentioned to her father and husband, of tubal abortion three and a half years before, was correct.

DR. ROLAND E. SKEEL, Cleveland.—According to the title of Dr. Huggin's paper as printed in the program, these cases were diagnosed before rupture, but in the body of the paper he uses the term "before final rupture." I would like to know whether any hemorrhage took place in these cases.

DR. HUGGINS.—Do you mean whether any blood escaped into the peritoneal cavity or not?

DR. SKEEL.—Yes, that is the point.

DR. HUGGINS.—My experience has been that in the earliest cases, when there were no signs of rupture, there was always present a slight amount of blood which probably escaped

through the fimbriated end of the tube. It may have been only a few drops, yet it was always present in the culdesac.

DR. SKEEL (resuming).—That is the basis on which I wish to make a few remarks, because the difference existing between the two expressions "before final rupture" and "before rupture" is what has led to discrepancies in diagnosis and acrid and acrimonious discussions as to the proper treatment of ectopic pregnancy. There are those who insist that early and immediate operation is the correct treatment, and that these cases should be viewed in the same light as would the rupture of any other vessel in the abdominal cavity. On the other hand, there are those who favor delaying operation, believing that the vessel will stop bleeding; that after a clot has formed in the mouth of the vessel the hemorrhage will cease, and will not begin again until the blood pressure is sufficiently raised to displace the clot and that delay can therefore be safely practised. As I understand it, this briefly represents the two schools of thought in reference to the treatment of ectopic pregnancy.

Now if Dr. Huggins having made the diagnosis and opened the abdomen had said that he found very little or no blood in the abdominal cavity before "final rupture" had taken place, it would have cleared up many things both as to the diagnosis and treatment of ectopic pregnancy. Unfortunately, however, the presumption is wrong that a large vessel ruptures when the so-called tubal rupture takes place, and that when bleeding stops, it stops because a clot has formed in the mouth of the vessel and that there will be no more hemorrhage unless the clot is displaced from the vessel.

Gynecologists and even obstetricians who should have known better seem to have overlooked the manner of implantation of the ovum in the uterus under normal circumstances and the tube under abnormal conditions. In the tube the burrowing of the chorionic villi may extend to or through the peritoneal covering of the tube so that even the most trivial hemorrhage is as truly indicative of a rupture as the more classical but less frequent so-called cataclysmic hemorrhages. Precisely the same hemorrhage occurs in tubal abortion when the chorionic villi are torn away from their projections into the decidua and the bleeding is trivial or severe according to the extent of separation of the ovum. The real point is that it is not one single hemorrhage that causes the classical symptoms of shock and collapse. On the contrary we may consider that the symptoms are those, not of one hemorrhage, but of the *last* one and it is the failure to recognize this fact that leads to the discrepancy of opinion concerning operative treatment.

Many surgeons who, like myself, believe emphatically in immediate operation, have come to the opinion that we need not prepare for operation at break-neck speed because this particular hemorrhage will possibly cease, but a correct view of the pathology demonstrates that other hemorrhages may take place at any

time so long as the ovum is alive. That clotting in one vessel will not prevent erosion through another one and that we should not therefore delay operation until to-morrow or the day after but as promptly as proper preparation can be made. So far as diagnosis is concerned the teaching has certainly been at fault as Dr. Huggins has so clearly pointed out, but I do not believe that it will better the methods of teaching to insist upon the evidence of so-called typical symptoms.

Take first sterility. I have operated upon several women for ectopic pregnancy who were still nursing their last baby. Next missed menstruation followed by irregular hemorrhage. I have seen several who never missed a menstrual period, and at least two who had missed menstrual periods and had no bleeding whatever so that they were presumed to be normally pregnant, and I do not believe that the typical text-book picture is present in 50 per cent. of the cases. I apprehend that the real difficulty arises from the fact that the general practitioner who first sees these patients looks for typical symptoms and when he does not find them dismisses the possibility of tubal pregnancy. He does this because he sees so many instances of indefinite pelvic disturbance in women which go on to recovery without a diagnosis having been made. Some of them were true cases of so-called tubal rupture or tubal abortion but the ovum died hence the hemorrhage ceased and the patient recovered spontaneously. Others were some other form of undiagnosed pelvic discomfort like very early abortion, and they also recovered spontaneously. Because of the spontaneous recoveries the family physician becomes careless regarding slight bleeding and pelvic pain and regularly overlooks ectopic pregnancy when the ovum continues to live until severe intraabdominal hemorrhage and the typical symptoms of collapse occur. This I think explains his failure to make an early diagnosis. I am quite convinced that many cases of ectopic pregnancy have no rupture in the sense in which the term is ordinarily used, but either an early tubal abortion takes place or the ovum dies and ceases to exert its parasitic action on the tube. In either event the patient may recover without severe abdominal discomfort. If there is any one typical characteristic evidence of ectopic pregnancy before severe hemorrhage and collapse it is neither previous sterility, missed menstruation, or spotting, but the extremely exquisite sensitiveness to pressure of the tube which contains an abnormally implanted ovum in its interior.

With regard to the second paper on interstitial pregnancy, Dr. Scott may not have had the misfortune I have had to curet the uterus for pernicious vomiting and fail to get the ovum or even disturb it. I have passed the curet around one side and down the other, over the top and under the bottom and then have been humiliated two or three days later by having the patient abort after a presumably thorough curettage had been done. Further, in the diagnosis of early pregnancy I think there is nothing so

absolutely significant as the fact that one horn of the uterus is irregularly soft and enlarged. I have seen good physicians make a diagnosis of ectopic pregnancy because a round soft mass was felt to one side with a hard body shaped like the uterus on the other. The latter they accepted as the normal uterus, the former a pregnant tube. Really the condition was that of normal pregnancy, that portion of the uterus upon which the ovum was implanted being much softer and probably growing more rapidly than the remainder. A little late in pregnancy the typical text-book globular uterus is present, but the first few weeks frequently present the conditions above described. In view of these facts no evidence has been adduced that three of these cases were anything but types of normal pregnancy with implantation of the ovum at one or the other uterine horn.

DR. E. GUSTAV ZINKE, Cincinnati.—I have been highly entertained by the papers that have been read as well as by the discussion following the reading of them. To discuss this subject thoroughly and properly, a whole afternoon and evening could be consumed to advantage.

As to the diagnosis of ectopic gestation, and the proper time for operation, I will say that he who has not grasped the pathology of ectopic gestation will often fail to diagnosticate cases of ectopic gestation. A tubal pregnancy, with a normal genital apparatus, is entirely different from an ectopic gestation occurring in a patient with a pathological condition of the tubes, ovaries and uterus. Again, the course and development of the ovum in the tube, or in the tube and ovary, or within the tubal portion of the uterus, gives rise to numerous and different symptoms. The symptoms of a tubal abortion are much milder than those observed in a case of tubal rupture. In the former, the symptoms are never alarming, and often the woman recovers, and the diagnosis remains in doubt. In a case of tubal rupture, in an otherwise normal pelvic cavity, the symptoms are so typical that it is difficult to mistake them for anything else. Again, we have cases of ectopic gestation which are strictly tubal, and remain so. These are the cases which are comparatively free from symptoms and may go to the end of term without the slightest suspicion as to the existence of ectopic pregnancy. No adhesions having taken place, the tumor is easily removed. In another case we may have a tubal rupture and the neighboring structures such as the intestine, omentum, the pelvic organs, and the pelvic peritoneum become involved. The fetus may live to the fifth or sixth month, when it dies from lack of nutrition, and becomes encrusted. Then, we have the cases in which the fetus undergoes solidification, lithopedion; or, if the membranes solidify, a lithokelyphos.

As to surgical interference. The man who claims that the moment the diagnosis of ectopic gestation has been made the women should be operated on without delay is mistaken. There are many cases of ectopic gestation, especially those of

tubal abortion, which recover without operative interference and leave the internal genitalia of the women perfectly intact. There are cases of tubal rupture with hemorrhage into the peritoneal cavity and the formation of a hematocele with or without coagulation and encapsulation. Both are cases for operative intervention. In the absence of coagulation and encapsulation, no time should be lost because the bleeding continues or, if it has ceased, may begin again. In the presence of coagulation, there is no immediate danger and the time and place for the operation may be selected, but should not be needlessly deferred.

As to the differential diagnosis of when and when not to operate. When a woman, supposed to be pregnant, has sudden and periodic pains in the pelvis which are easily controlled, and a tumor appears to one or the other side of the uterus, which at first is doughy and grows harder and smaller from day to day, and if the pains subside, and the pulse becomes normal, it certainly is not a case for immediate operation. If there is no recurrence of symptoms and the pelvic tumor disappears, the indication for operative interference no longer exists. If, on the contrary, the pains recur and the tumor grows larger, the sooner the operation is performed the better—but even here hours or even days may be spent in preparing the patient for the operation. She need not be rushed to the operating-table. It is an entirely different affair if you have a case of tubal rupture without the formation of a pelvic tumor, and all the symptoms of ascites and of shock. Here no time should be lost. Half a day may be too long. In a case of this kind, while we are preparing for the operation, or while she is on her way to a hospital with an icebag on the abdomen, her condition may have improved and she is better able to stand the operation than had the abdomen been opened at her home, while in shock and unprepared. This simply means coagulation has taken place, and that hemorrhage has ceased, and that the patient is in a much better condition for operation. I have never seen a case recover when operated on in profound shock. There is, then, a time for waiting and watching. While you watch and wait everything is made ready for the operation. I protest earnestly against the so-called "shoe-string operation" without any preparation whatsoever.

DR. HUGO O. PANTZER, Indianapolis.—I would like to add another symptom to the signs and symptoms given by Dr. Huggins in his paper, which no doubt was inadvertently omitted, namely, pulsation. It is invariably present during an active, not defunct, ectopic gestation and is confined, more or less, to one side. In rare instances unilateral pulsation attends ovarian congestion or tubal inflammation. When the former obtains, a day or two of rest in bed will cause the pulsation to subside which is not true when due to a pregnant tube. In the event of an inflammatory condition of a tube the rectal temperature, above the normal, will at once designate it such, in contradistinction to an invariable normal temperature in uncomplicated ectopic gestation

Regarding the second paper, I have seen a case I would like to designate as interstitial pregnancy of the internal type. In this instance the patient went on to full term, and had been in labor ten or twelve hours, suffering intensely from pain throughout the abdomen when first I saw her. I found the uterus of irregular form. The fundus at its right horn had a nodular tumefaction resembling a fibroid of the size of a fetal head. Labor had progressed to moderate dilatation of the cervix, and fair engagement of the head. Inasmuch as labor was active it was decided not to interfere. Birth occurred spontaneously a short time later. Immediately after delivery the uterus was found of normal form and size. This finding at the time was regarded sufficient evidence there had existed an internal interstitial pregnancy and not a pregnancy in an uterus bicornis or unicornis.

DR. CHARLES L. BONIFIELD, Cincinnati.—These two papers are exceedingly interesting. There is one point brought out by Dr. Skeel which I would like to emphasize, and that is a great many cases of ectopic gestation get well without operation. It is the experience of every operator who has done much work and has operated on many of these cases, that when he has examined the specimen, he has frequently wished he had left it alone, believing that nature would have cured his patient.

Some years ago I reported to the Academy of Medicine of Cincinnati a series of cases of ectopic gestation, having operated on four of them in a week. One old practitioner at that meeting asked those present who had seen cases of ectopic pregnancy to hold up their hands. There was fully as large a number present as are here to-day (about eighty physicians), and not over one-third of them held up their hands. What did that mean? It did not mean that they had not seen cases of ectopic pregnancy, for they could not have been engaged in practice for twenty-five or more years without seeing them. They had undoubtedly seen them but had not recognized them. In contradistinction to that, I know one young graduate, who has not been practising more than six or eight years, who sent me ten cases on which I operated for him, and Dr. Miller, of Cincinnati, has operated on two or three more. This young practitioner recognizes every case he gets, and we are operating on them for him.

It is not every case that leads to a fatal hemorrhage, and many of them will recover without operation.

Dr. Zinke has emphasized the difference between tubal abortion and tubal rupture. He has drawn the lines a little broader than they should be drawn. I have seen many cases of tubal abortion attended with considerable evidence of shock and profuse hemorrhage. Other things being equal, I believe we will have the severest hemorrhage in those cases in which there is rupture of the tube rather than in those in which rupture of the tube takes place near the horn of the uterus.

As to the second paper, like Dr. Skeel, I am not entirely convinced as to the interstitial character of the pregnancy in these

cases. It is difficult for me to introduce a sound into the Fallopian tube; it may be easy for others, but I have not been able to do it. I have perforated the uterine wall with a sound many times, and many times I have perforated the uterus when for some other condition I was going to open the abdomen, and I found in opening the abdomen it was difficult to locate the perforation, but after a little search in looking for the hemorrhage I found that I had perforated it between the folds of the broad ligament, and the hemorrhage was there. Nature would have taken care of it.

As to the necessity for operation, Dr. Zinke I think has covered that point very nicely indeed. I have seen many cases in which I have thought an urgent operation was needed, but I see many other cases, especially when I know some one is going to do the operation who has not much experience in abdominal surgery, where it would be better for the patient to wait seven or eight days until she has to a certain extent made up for the loss of blood when she has recovered from shock, and we must bear in mind that shock is not due entirely to hemorrhage, but to the sudden pouring of this fluid into the peritoneal cavity, and that shock is recovered from in a few hours.

DR. WILLIAM H. WATHEN, Louisville (by invitation).—I have always been much interested in the subject of ectopic pregnancy. I remember well how Mr. Tait emphasized what he believed to be a fact, that all ruptures in cases of tubal pregnancy into the peritoneal cavity would speedily end in death if the patient was not operated promptly. My experience, which has been relatively large, leads me to say that I was one of the first to observe that that was not true, and in looking over my cases I find that I have seen in my practice and in consultation work approximately 150 of these cases, and I have never seen but one woman who bled to death on account of ruptured ectopic pregnancy, and that was about twenty years ago when I was called and reached the patient just as a secondary hemorrhage had caused her death. These women will never bleed to death if the rupture is between the folds of the broad ligament, and seldom, if ever, if it is a tubal abortion. They may, if the rupture is through the tube into the peritoneal cavity, provided a large vessel has ruptured. But even that is very exceptional, and I believe that if we will take all the cases of ectopic pregnancy that have ruptured during the last twelve months, we will find that not one out of fifty women have bled to death from secondary hemorrhage. The hemorrhage will finally cease, and the patient, if the hemorrhage is not too extensive into the peritoneal cavity, may entirely recover; and were we to take the cases of ectopic pregnancy that have ruptured during the last year and were not operated, we would find that nearly all of them would have recovered from the immediate effects, some of them making permanent recoveries, but most of them with a crippled condition in their pelvis, which might finally require further treatment. However that may be, I would advocate, where there are any

marked symptoms or a considerable amount of blood in the pelvis, operating on all such cases.

As to the diagnosis, I must say I have never made it until after the rupture has taken place, because no one had ever consulted me until after that had occurred. Other men have been more fortunate than I in seeing these cases and operating on them before rupture.

As to interstitial pregnancy, I have had but one such case, and this was exceedingly interesting. The case occurred before we knew but little about ectopic pregnancy. The woman, as we supposed, had a normal conception, and in about two and a half or three months there was decided enlargement in the left cornu of the uterus. There were no unusual symptoms except the uterus enlarged very rapidly, and within a month and a half thereafter it had grown to be as large as a uterus at full term. She began to have uterine contractions, and expelled an enormous quantity of hydatiform degeneration of the villi of the chorion. This tumor had disappeared in the left horn. I have operated in ectopic pregnancy from the fifth week to the fifth month, and the one case eighteen months beyond term with a fully developed child which was never diagnosed. I removed a child a little larger than the average, removed the membranes, and the placenta, which was attached to the various pelvic structures, even to the intestine. This woman had declined to be almost a skeleton and was a morphin fiend. She recovered from the operation. There was no excessive hemorrhage, although the placenta was larger than the average placenta, and the attachment was firm and the placenta as normal as an intrauterine placenta at term.

DR. WALTER B. DORSETT, St. Louis.—With all due respect to my friend, Dr. Wathen, who is just leaving the hall, I want to say that I believe his statement is rather too sweeping, and I am impelled to make these remarks on account of what I have discovered postmortem in a case of tubal pregnancy, the first one I ever saw. I had taken charge of a female hospital and had never seen very many pregnant women before that. It is a general hospital. They were plastering the building, and the patients were out in tents in the yard, when a thunder storm occurred and frightened the patients. One of the women ran up to the third floor and fell, shortly after which she died from a ruptured ectopic pregnancy. She had been in the hospital only two or three hours. The dispensary physician made a rather sweeping diagnosis of heart failure and we were ready to accept it. An assistant made a post-mortem on the case, after the body was taken to the dead house, and when the thorax was opened there was nothing found out of the way, but as soon as the incision was carried down into the abdomen, the abdomen was found full of blood, showing that the woman had bled to death. I have that specimen today, and it is a remarkable one. This occurred in 1887, and it shows very distinctly what was brought out here by Dr.

Skeel in which the rupture in that case resembled more a punch hole than anything else, not a rupture in which there was a tearing of the tissues, but simply a round hole in the tube. That woman bled to death through the opening which was probably as small as the tip of my little finger. It exemplified what was brought out before, and more particularly by Dr. Frank Glasgow, of St. Louis, in which he claimed that most of these cases of so-called rupture are really erosious of the tube by the chorionic villi.

In going over the title of the paper today, the question came up in my mind as to what we should designate as a rupture. Shall we say it is a rupture when there is simply blood in the tube, one coat having given away, and the other coats of the tube have not given away, or shall we say it is a rupture when the tube is entirely torn through? I doubt the proposition that most of these are not due to a digestive process on the part of the parasite, or that it is the proper way to look at these solutions of continuity.

Speaking of the time of operation, not long ago a woman consulted me who fell from a chair while she was taking lessons in a millinery establishment. She was brought to the hospital, and I saw her in ten minutes after she arrived. I was afraid to operate on her, and simply declined to do so because I did not think in the condition she was in she would get off the table alive, and I did not think I should operate without an anesthetic, and so I waited until the next day, thinking she was going to die that night. The next morning I opened her abdomen, tied off the pedicle, lifted out the mass, and she recovered. I think the general discussion has brought out the point with reference to the time of operation. There are cases in which, when rupture has taken place, it would be fatal to operate, and in a certain number of these cases operation ought to be postponed.

With reference to the paper of Dr. Scott, I would like to say a word with reference to the cause of interstitial pregnancy. The writer failed to bring out the fact that occasionally a fibroid tumor or tumors around the horn of the uterus will sometimes cause an interstitial pregnancy. I recall a case now upon which I operated, thinking I had a fibroid tumor to deal with, and simply did a myomectomy. When I got down there and opened it up, I found a dead fetus in the horn of the uterus and a fibroid tumor immediately under it, pushing the cornu of the uterus or end of the tube in such a way that it was kinked, and the fetus had developed in the horn.

DR. A. B. MILLER, Syracuse.—When this subject was being discussed two years ago, it was a question in my mind whether we were aiding the general practitioner in diagnosis and treatment, the two most important factors in relation to the subject. The causation and pathology are considered by all alike; the diagnosis must remain uncertain, as the symptoms must vary in the majority of cases; in some being strongly suggestive, while in others entirely or nearly absent. When ectopic pregnancy

is suspected by the general practitioner, the physical findings are so closely allied to other pathologic conditions, that even in the hands of trained diagnosticians there is often a question of doubt.

I wish to emphasize the point of diagnosis brought out by Dr. Skeel—extreme tenderness in the culdesac or vaginal vault appreciated by digital examination. This, combined with other physical findings, with the absence of general constitutional symptoms attendant on inflammatory conditions, and aided by the history, make the diagnosis as certain as it can be without exploration. To make the diagnosis prior to rupture must be speculative for the reasons mentioned—namely, absence of symptoms of sufficient gravity to cause the patient to consult her physician.

While it is necessary to counsel the physician to be alert to the necessity of recognizing the condition early, it is not as imporant as a few years since. Then the profession understood this condition about the same as they did appendicitis, but now the colleges of Medicine are educating their graduates to fully comprehend the significance and dangers of interperitoneal troubles, and it can no longer be attributed to ignorance on the part of the medical man.

Members of this society will continue to differ in their methods of treatment of ectopic gestation, and it will be impossible to lay down a law to govern all cases. It has been my experience to operate on all cases as soon as recognized, and my results justify the method, as my mortality has been practically nil where there were not other conditions that might have caused the fatality, as I have stated, in full, at other meetings of this association.

I was much interested in the paper on interstitial pregnancy. I recall having seen but one case of this kind, and this one conformed to the histories as taught in our text-books; extreme hemorrhage with collapse and death. This case occurred in the wife of a young doctor. The symptoms had conformed to that of normal pregnancy. The doctor awoke one night to find his wife breathing heavily by his side. Examination proved she was in collapse with all the attending symptoms of internal hemorrhage. The wife was hurried to the hospital and all remedial measures were resorted to but without avail. Examination proved it to be interstitial ectopic pregnancy. I saw another case that I diagnosed as interstitial pregnancy. The uterus was irregular with a boss on the right cornia. Pains came on and the condition for a few hours was threatening. Close attention was given the case, that if symptoms of rupture with hemorrhage occurred, an operation could be performed at once; but the symptoms abated, the uterus became regular in outline, and the case went to full term normally. My diagnosis was interstitial pregnancy; I am convinced it was, but as a diagnosis of this character has to be speculative, and the pro-

fession and laity want proof, I can scarcely believe they will sympathize in positive conclusions in this condition.

DR. D. C. MORIARTA, Saratoga Springs, New York.—It seems to me, Mr. Chairman, that I represent in a measure, the class of practitioners which you all mention in your discussion as a common factor, at least an early one, in the treatment of extrauterine pregnancy, that is, the general practitioner.

Each year this subject is before the society, and the discussion is prolific, but neither uniform nor unanimous; and if the much-talked-of general practitioner had heard the discussion here to-day, I question if how he is to proceed would be clear in his mind, except as to one feature, and that is to get all his cases of extrauterine pregnancy at once into your hands.

Dr. Zinke states that many of these cases do not need operation. Dr. Bonifield states that he has operated on a great many of these cases which would have recovered if an operation had not been done. Dr. Dorsett speaks of two cases for which nothing was done, of which one died and the other recovered. But there is nothing in the discussion to indicate to the general practitioner, why they did not both die or both recover.

Nothing could have been worse for the general practitioner than to have listened to these statements. Naturally the general practitioner wants to retain his cases for the fee, and why should he not if nothing is to be done, at least in many of these cases? I believe such teaching is wrong, and that all cases of extrauterine pregnancy should be treated just as we treat appendicitis or just as we do in the early cases of tuberculosis. In either of these diseases there will be patients who need not to have been operated on, nor have been told that they have tuberculosis, because some of them will get well if let alone. On the other hand, if the greatest number are to be saved, they must be treated intelligently and scientifically, which to my mind calls for an operation as soon as the diagnosis is made.

Thus my position is that every case of extrauterine pregnancy should be operated upon, and as early as the diagnosis is established, if the greatest number of recoveries are to occur.

With reference to the remarks of Dr. Smith as to the etiology of the condition, some years ago within a period of three weeks, I treated extrauterine pregnancy in a single woman, a bride and a woman at the menopause, in each of whom this condition was confirmed by operation.

DR. WALTER B. DORSETT, St. Louis.—I want to explain that this woman who died suddenly did not suffer from anything in her abdomen. There was no diagnosis made. She came to the hospital and was only there two or three hours, and I did not examine her. She came there with a diagnosis of heart disease.

DR. MORIARTY.—Would you have allowed her to have gone on if you had recognized her condition?

DR. DORSETT.—Perhaps I would because it was my first case. She was dead before a physician could reach her.

DR. MORIARTY.—I want to know what you are going to do with such a patient if I brought her to you.

DR. DORSETT.—Operate if pulse is strong enough.

DR. MILES F. PORTER, Fort Wayne.—In the first place, gentlemen, it is not true that none of these women die of hemorrhage. Dr Dorsett knows better than that; Dr. Miller knows better than that, and I know better than that, and if I were to ask all here who had had patients to bleed to death from ruptured ectopic pregnancy to raise their hands I fancy I would see several hands go up. It is seldom safe to say we always do this, or we always do that, or that we never see that, or we never see this. This is one mistake I want to correct. Women *do die* from ruptured ectopic pregnancy.

Now, I would like to be able to exercise that extreme *finesse* in diagnosis to which my friend, Zinke, alludes, and of which he is undoubtedly possessed, but I am not going to try to achieve this and I will tell you why. Because long before I succeeded, if I ever did, I would have a lot of scalps hanging to my belt as the result of the trials. We are not talking to men here that do not understand their business. It is taken for granted that the man who is going to operate will do it well. I undertake to say, I can find fifty men who will be able to operate on all of these cases practically as they come to them, and they will have a less death rate than another fifty men who attempt to practice the *finesse* of which Dr. Zinke speaks, and that is the reason I am not in favor of this extreme diagnostic *finesse*. When a diagnosis of ectopic pregnancy is made in the case of my wife or daughter, some friend or a patient, I do not care what Dr. Zinke or any other man may say about the probability of that patient going on to term. Possibly she will, and probably she will not, and I think it is better therefore to operate and take out the tube. I know what will happen if I take out that tube. One does not remove a tube with the abdominal pregnancy for the simple reason that it contains an abdominal pregnancy, but the chances are the tube was diseased before the pregnancy occurred and that, in all human probability, there is enough pathology in the tube aside from the pregnancy to warrant its removal.

With reference to shock I cannot agree with Dr. Bonifield that these cases are suffering from shock rather than hemorrhage. Is it not an every-day experience that we fill a woman's belly with warm saline solution? What for? To help to overcome the shock, and it does it. Why should filling her belly with warm blood create shock *per se?* It is because there has been a more or less rapid emptying of the blood-vessels, she has lost blood, and the heart has lost the stimulus which creates under ordinary circumstances rhythmic contraction, and you have air hunger and all that sort of thing. If there is hemorrhage and it is still going on, why not tie the vessels? If it has stopped after the woman has fainted, and she is in that extreme condition, nature

has cured the hemorrhage temporarily, and you can wait, if you feel safe about it, for a few hours.

I do not wonder much that the general practitioner does not do any better than some of our friends seem to think he does, particularly when he hears a body of men like ourselves advancing so many different opinions. You cannot blame the fellow. He thinks Zinke is right; I think most general practitioners do, and they are able to make the diagnoses that Dr. Zinke is able to make, and therefore allow their patients to wait until they go into the hospital and are well-nigh in *articulo mortis*.

DR. WILLIAM H. HUMISTON, Cleveland.—The discussion of this paper has taken a wide range, but I desire to say a few words on the diagnosis before rupture has occurred. I have had but few cases in which I was consulted before rupture occurred and they presented no special difficulties in the way of diagnosis, for after obtaining carefully the history a bi-manual examination readily revealed the condition.

The trouble is our opportunities of seeing these cases before rupture are remote, for the patient does not consult a physician until hemorrhage has occurred.

My first case was sent me by a general practitioner who had made the diagnosis before rupture. He was a well qualified, careful, painstaking physician, and after taking a full history and then making an examination, he was able to make a diagnosis that I confirmed; operated as soon as the patient could be taken to the hospital and prepared. It is the ideal time to operate, and if patients could be induced to consult their physician upon the occurrence of pain or irregular bleeding from the uterus after they have missed a menstrual period, many of the cases would be diagnosed before rupture occurs.

A nervous, apprehensive patient will consult a physician early, and the other three cases I have had were of this type.

Once in a while we come up to a condition in a patient that so clearly resembles an ectopic gestation, that is, tuboovarian disease, that a mistake in diagnosis can be readily made. I will tell of a patient upon whom I made a mistaken diagnosis.

There was a typical history of extrauterine gestation. Nothing to excite a suspicion of specific infection in the history or examination. There was no elevation of temperature during the few days she was in the hospital under observation. She had a bloody discharge that appeared six weeks following the last menstrual period. On bi-manual examination, the uterus was a little enlarged, and the cervix was softened; a globular mass was found to the right of the uterus, not as tender to touch as an inflammatory mass, and the left vaginal vault was free. I diagnosed unruptured tubal pregnancy, operated, and found a tuboovarian inflammation.

In reference to operating at once when rupture has occurred I will state that it has been my practice to do so as soon as preparations could be made and I have yet to regret doing so for I

have a *nil* mortality. The shock is due to the rupture, pain and the loss of blood, and in many cases will continue until death occurs. I do not hesitate to operate in shock, and by the following method you can take the patient off the table at the close of the operation in far better condition than she went on.

As soon as they are partially unconscious from ether, administered by the drop method, I start the submammary injection of sterile normal saline solution and keep it up until the close of the operation. As soon as the abdominal cavity is opened locate the side rupture has occurred; place a clamp on the blood ligament near pelvic wall and another close to the fundus of the uterus. The bleeding is under complete control and by this time the strengthening effect of the saline has begun, and the heart will grow stronger throughout the balance of the operation of removing the ruptured tube, taking out the clotted blood and uniting the abdominal incision.

I have started operations of this nature with the patient pulseless and removed them from the table in a satisfactory condition.

I know of one case in my city in which the diagnosis of ruptured ectopic gestation was readily made but because of shock the operation was delayed hours waiting for a reaction to come; failing to show any symptoms of rallying, she was operated upon and died before the operation was completed. Her abdomen was filled with blood.

DR. HUGGINS (closing the discussion on his part).—I am very sorry I did not say something about the treatment. My paper was purposely brief, and I simply wanted to emphasize a few points in order to direct your attention toward the pelvic organs.

Dr. Baldwin has said that we are all specialists and are able to recognize this condition. That being true, many of us who are teachers in hospitals should consider it our duty to teach the general practitioner and the internes these conditions, so that they will be able to recognize them. The internes in my service have seen the majority of these cases with me and have been able to make a diagnosis themselves. The cases have been diagnosed in the early stages before there was any serious hemorrhage.

The point brought out by Dr. Skeel of the presence of hemorrhage from the tube has been true. In a number of these cases there has been a thin spot in the tube, showing that in a few days the erosion would have continued in the peritoneal surface and hemorrhage would have occurred. But these local pelvic signs should be taken with the clinical history.

Another point Dr. Skeel criticised was that I laid too much stress on sterility. I did not mean to primarily. I laid stress on the fact that most of the tubes were diseased. Incidentally, in many cases you get a history of sterility, but that is not true in all cases. There is no question but that if these cases are studied carefully, with the history, the physical signs, carefully analyzed, we will be able to make a diagnosis in the great majority of cases.

DR. SCOTT (closing the discussion).—I have been very much

interested in the number of cases that have been reported here today. When we look over the literature you will find that these cases are comparatively rare, and yet on the spur of the moment the members of this association have reported five cases. This shows that they are more frequent in occurrence than they have been thought to be in the past.

With reference to the statement that these cases are not interstitial pregnancies because you cannot sound the tube, that is begging the question. Of course, you cannot sound a normal tube, but if you have dilatation of the tube you can sound it, and in these interstitial varieties you get a dilatation of the tube.

I was much pleased to hear the remarks of Dr. Skeel and of Dr. Bonifield. I know it is difficult to get the ovum entirely free in the uterine cavity. I know also how hard it is to get a small head which has been severed from the body that is free in the uterine cavity, but that does not account for the dilated tube. If you explore the uterus and do not find anything in it, and later the ovum, two or three months in size, comes away and you then have no difficulty in passing an instrument into the tube, you must conclude that this is an interstitial pregnancy; more especially is this true if you have had a chance to examine the uterus before it becomes pregnant, and have examined it afterward, and you know there is no anatomical anomaly.

MULTIPLE CESAREAN SECTION, BOTH HIGH AND LOW OPERATIONS.

BY

WILLIAM H. HUMISTON, M. D.,

Associate Professor of Gynecology in the Medical Department of Western Reserve University,

Cleveland, Ohio.

(With two illustrations.)

I REPORTED this case at our last meeting, and to make it complete I will add her subsequent history, which is of interest. The original history I will repeat.

Mrs. L., age twenty-four, height 4 feet 6 inches, weight 105 pounds, came to consult me January 6, 1909; married three years. Been pregnant but once, two years ago, child was still-born, high forceps delivery at her home, Philadelphia, Pa. Her menstrual history is as follows: Began at eleven and a half years, regular, every twenty-eight-day type, duration two to three days, painless up to the time she became pregnant. Since birth of child suffers pain and flows too freely and passes clots, and it continues for five days. Leukorrhea, since birth of child, stains her clothing. Complains now of the following symptoms: bearing-down pains in lower abdomen, backache, headache, occipital, pain radiating down thighs, nauseated at menstrual period, leukorrhea. Appetite poor, digestion disturbed, pain after eating, gas, bowels constipated, urination painful and frequent. Also complains of swelling in right groin which enlarges and comes down on coughing or walking.

The history of the development of her present condition is as follows: was well until the instrumental delivery of a still-born child two years ago. Suffered great pain and had fever following and was confined to her bed for some time. Has been unable to regain her former state of health. Feels discouraged. Her general and family history are good.

Examination.—Heart and lungs normal. Abdomen normal except as to pain on pressure in both lower quadrants. Vaginal outlet large, vagina lacerated to sphincter ani, rectocele, cervix

low down and lacerated on right side to vaginal junction. Uterus enlarged, prolapsed, movable, sensitive to touch.

The promontory of sacrum was readily felt by finger. Both tubes and ovaries palpable, right ovary slightly larger than left, but neither seemed abnormal. The cervical canal was filled with a mucopurulent discharge.

Operation January 11, 1909. Curetment, trachelorrhaphy, perineorrhaphy, and radical operation for right femoral hernia. She made a rapid recovery and left the hospital in three weeks. At time of discharge the pelvic measurements were taken:

Internal conj.	Crests	25. cm.
	Spines	25. cm.
	Ext. conjugate	17. cm.
	Diagonal	9.5 cm.
	True	7.5 cm.
	Right oblique	18. cm.
	Left oblique	18. + cm.
	Tuberosities	7. cm.

This woman and her husband were desirous of having children and promised to return to me if pregnancy occurred.

I next saw her October 9, 1909, when she called to see me at the hospital, stating she was pregnant. On examination I determined she was about seven months pregnant. I explained then to her how she could have a living child through an abdominal incision. She had gained in weight, strength, and color, and was in good spirits. The next visit she was accompanied by her husband and all arrangements were made for her to enter the hospital the middle of December, as I estimated her time would be up about Christmas day.

She was admitted December 14 and ordered daily baths. No vaginal examination to be made. Abdominal palpation found the head down but not engaged. December 16, during the afternoon, patient complained of backache and at 8 P. M. it was noted slight pains at intervals of one-half hour had existed for three hours. At 9 o'clock, after thoroughly cleansing of vulva, I made a vaginal examination, using rubber gloves, and found the cervical canal would admit the finger. The patient was prepared for operation, Drs. O. T. Thomas and R. A. Bolt assisting.

The hospital Alumni Banquet was in progress and the physicians, about forty in number, were invited to the operation which took place in the amphitheater. Ergotol, half a dram, was given hypodermically as the anesthetic was started, which was

ether by the drop method. An incision 5 inches in length was made from the umbilicus upward and the uterus exposed. Gauze packs were placed on both sides and above the uterus. A longitudinal incision was made in fundus of uterus while an assistant held the uterus firmly up against the abdominal wall by pressure from below. The placenta was immediately beneath the incision, the hand was quickly pushed through it, the feet were seized and the child quickly delivered, the cord being clamped in two places and severed, and turned over to an assistant who took charge of it. The child cried lustily.

Placenta with membranes was quickly removed and a chromic catgut No. 2 suture was placed through the uterine wall at upper and lower angle of incision, tied, left long and held by an assistant while the intervening sutures, interrupted, were inserted and tied. This prevented the uterus from receding from the abdominal incision. A continuous suture of catgut united closely the peritoneal surface of the uterus. The abdomen was closed with layer sutures, and the patient put to bed in good condition—pulse 72. The child was delivered in two minutes, the time of entire operation thirty minutes, and no more blood lost than at normal labor. The child weighed 5 1/2 pounds, was plump and strong, and able to nurse the following morning. The patient had a normal convalescence, sitting up the eighth day, and left the hospital January 13, 1910.

This patient suffered so little in comparison to her first confinement that she is determined to have more children, and it is possible I may be able to equal Dr. Davis's record of five Cesarean operations upon one woman. The incision at the fundus, in my opinion, is less liable to give after-trouble than the lower incision.

On July 25, 1911, patient returned to Cleveland to consult me. Has been living in Pennsylvania since leaving Cleveland. She brought her child, now nineteen months old, that I delivered through a high abdominal incision. Child well developed and healthy. The mother was in poor health and looked pale and reduced in flesh. She said her illness began following a second Cesarean operation in May, 1911. The child was well developed but lived only a few hours.

Patient has menstruated twice since last Cesarean operation, attended with an increase of pain from which she suffers constantly. This continuous pain is confined to lower abdomen. Suffers from headache and constipation and is very nervous.

On examination I found a long well-marked scar reaching from umbilicus to pubis, a little to right of median line, as is well shown in this photograph I had made in July, 1911. It also clearly shows the high incision made at the time I operated and delivered a healthy, living baby as above reported.

FIG. 1.—Child, mother and nurse.

The lower abdomen was sensitive to pressure, and with the constant pain without elevation of temperature, I concluded we had adhesions of some of the abdominal structures. Vaginal and bimonnel examination revealed a normal outlet and vagina, small cervix high up not freely movable, absence of the body of the uterus was determined. I told her the uterus had been

removed. She seemed surprised, but stated that the doctor told her she would not have any more children.

This brings up the question, Are we justified in removing the uterus in a young woman when it is possible for her to have an average sized family with the slight risk that is taken by the modern high Cesarean operation in competent hands? The destruction of her first child by the high forceps delivery with extensive lacerations of the mother's soft parts, and resulting in invalidism, compared to her first Cesarean operation, from

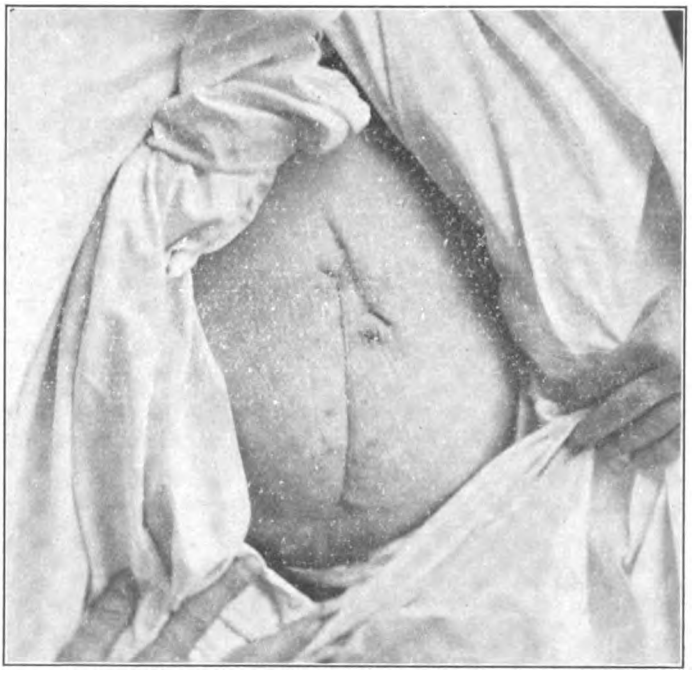


FIG. 2.—Scars from high and low incision for Cesarean section.

which she recovered rapidly without suffering, nursed her child, and was out of bed in nine days—together with the increasing number of cases in which the Cesarean operation has been resorted to successfully for both mother and child for the second, third, fourth, and even fifth time, I am convinced that the uterus should not be removed for the *sole purpose* of preventing further pregnancies.

I trust this important question will be actively discussed by the fellows of this Society, that it may reach the profession throughout this country, as Cesarean section is to be resorted

to more frequently in the future, as the indications for its performance have been extended, and in many cases is indicated where high forceps is now attempted. High forceps resulting in a high mortality for the child, and extensive laceration of the mother's soft parts, frequently followed by septic infection with a fatal termination.

DISCUSSION.

DR. ASA B. DAVIS, New York City.—I heartily endorse what Dr. Humiston has said about repeated Cesarean sections in women who are capable of bearing children, or Cesarean section in preference to high forceps operation, difficult versions, or medium forceps where there is well marked disproportion between the capacity of the pelvis and the child which is attempting to pass through it. I think we should reiterate to ourselves and to those who may come under our teaching, the statement made by Dr. Humiston a year ago; *i.e.*, "High and difficult medium forceps operations and difficult versions are eminently capital operations." They are too often accompanied by great danger to the mother and child and chagrin for the operator. And yet, there are the border-line cases where we are delivering sometimes in the old way —and I can recall, within the last six months, at least six of these cases that have either come under my personal care or that of my colleagues, where we have had still-births and the mothers have been frightfully lacerated, so that they have been practically incapacitated from bearing children, on account of the resulting scars and have been rendered either temporary or permanent invalids. We never see such results following Cesarean section. In well-timed operations, there is no pressure exerted upon the child. The mother's cervix and pelvis floor remain intact, and we may perform this operation repeatedly without great danger. To illustrate: July 4, a rachitic woman, twenty-three years old, was discharged from my wards and went to her home, a town at some distance in New Jersey, on the eleventh day of her puerperium, carrying the third child that I had delivered her of by Cesarean section in the past four years. She and all of her children are in excellent condition. In the service of the Lying-in, Hospital we have had in the last twenty years, in round numbers 73,000 deliveries—something over 300 of these deliveries have been by Cesarean section. I have performed 104 of these operations myself, and I am more and more in favor of them. I am distinctly in favor of the small median incision above the umbilicus, and the more I see and learn of other methods, the more I believe that the high incision is the operation of preference.

In the 300 or more Cesarean operations, there have been in the neighborhood of fifty where the operation has been repeated. A year ago Dr. Ross McPherson reported all of the repeated

Cesarean sections performed in the service of the Lying-in Hospital up to that time—thirty-eight in number. I have operated repeatedly upon fifteen patients—eleven the second time, three the third time, and one the fifth time.

My own experience is fairly representative of that of all of the operators in the Lying-in Hospital service. It is only in exceptional instances that we sterilize women after Cesarean section. We do not feel that we are any more justified in rendering these women incapable of further child bearing just because we have the abdomen open than we would under other conditions, and the fact that they are repeatedly delivered in this way successfully and with greater ease and safety for mother and child than are many so-called normal labors is to be borne in mind. Where we are able to observe the patient from early in her pregnancy so that we know from its duration that the child is mature or nearly so, there is no objection to electing a convenient time in the last weeks of pregnancy for delivery by Cesarean section.

Where we do not know the history of the pregnancy, we risk delivering a premature child unless we wait for labor to begin. A deformed pelvis and spinal column may hold the fetus up in greater prominence and make it appear larger than it really is, and a few times, by failing to take the above precaution, premature children who failed to survive have been delivered in this way. Many of these operations are emergencies, but when we are able to, we operate at once as soon as beginning labor assures us a mature child and we thus save the mother from further labor pains and the child from compression. It is not necessary to wait for dilatation of the cervix or to manually dilate it in order to assure drainage. I believe there is a decided risk from contamination and traumatism in dilating the cervix in these cases.

Having operated upon eleven women by Cesarean section who were in active eclampsia, not at term, not in labor, nearly all of whom were primiparous with elongated tightly closed crevices in which no attempt at dilatation was made, eight mothers recovering, and in whom the uterine relaxation following operation was sufficient to allow perfect drainage, I may be pardoned if I speak with decided assurance upon this point.

Like other abnormalities in a large service, patients requiring Cesarean section come to us in groups. Last March I performed this operation upon nine women, three of whom went to their homes well on the tenth day postpartum, at their own request. During the following month I did not see one requiring this operation. These women suffer the pain and discomfort common to any laparotomy. There is abdominal distention. Practically all of this passes away by the end of the first forty-eight hours, and they are treated like any other puerperal women. They nurse their children. The head of the bed is raised to favor drainage and the descent of the uterus toward the pelvis. In the uncomplicated cases they are allowed to sit up out of bed on the eighth day following operation and to

go home on the twelfth day. In all abdominal operations there is of necessity more or less raw surface and adhesions are liable to form. The high incision is made particularly to avoid adhesions between the uterine and the abdominal wound. But adhesions may form between the uterus, the omentum and the intestine, and we have this in mind when we encourage the early upright position for these patients. By gravity the uterus will descend toward the pelvis and tear itself free before adhesions are firm. And we find in subsequent operations, many times the uterus is free from adhesions. Sometimes we are unable to find the site of the former operation in the uterus. In others there is a firm, strong, white cicatrix, and in yet others the scar is of irregular thickness as though one or more sutures had failed to hold. I can think of but five cases in over 300 Cesarean operations in which rupture of the uterus has occurred in women in labor subsequent to having had Cesarean performed upon themselves. In every instance these women had allowed themselves to go on in active labor for forty-eight or more hours without medical attendance of any kind. It is a fair inference that no uterine rupture would have occurred had they placed themselves under competent observation early in pregnancy.

DR. E. GUSTAV ZINKE, Cincinnati.—There is only one question I want to bring up in connection with this subject: Shall we commit ourselves here as to whether we are to sit alone in judgment when confronted with this certainly very important question? Professionally speaking, we have no right to sterilize a patient. We have no right to remove any organ unless the life and health of the patient demands it. But Cesarean section, in spite of the fact that it has been performed repeatedly and successfully on the same patient in a number of cases, still remains a dangerous operative procedure. It means the opening of the abdomen, as well as of the uterus. No one can deny there is danger in both. In every case of Cesarean section there is a certain amount of danger which we cannot entirely eliminate. Therefore, it seems to me the woman, and perhaps the husband, have a right to speak in their own behalf. I am not disposed to commit myself definitely on this inquiry at this time.

DR. RUFUS B. HALL, Cincinnati.—I rise to emphasize what Dr. Zinke has said. I believe that in these cases we have no right as a profession to sterilize these women without their knowledge and consent. We have no right to remove the uterus because a woman has had a Cesarean section performed, and especially in such a case as has been reported by the essayist, because there is a better method of treatment. Evidently this particular patient did not know that her uterus was removed. She came to him complaining of certain symptoms, the pain being referable to her abdomen, the patient thinking that it meant the establishment of the menstrual period. My opinion is that the patient could be made a good deal more comfortable by leaving the uterus and by sterilizing her, for it was a matter of not bearing children.

I claim that the physician has no right morally to sterilize a woman or to remove her uterus without her knowledge and that of her husband, and without obtaining their consent. I believe, however, that there is some justice in the operation of sterilizing a woman after she has had a Cesarean section or two. The wife and husband have a right to decide that, after they know what it means, whether they will have another Cesarean section or not, and I believe their wish should be respected. I would not hesitate to sterilize a woman under these circumstances if she asks me to do so, and especially if the husband gave his consent. In fact, I believe it would be my professional duty to do so for the reasons mentioned by Dr. Zinke.

DR. CHARLES N. SMITH, Toledo.—There is one other question that comes up. Cesarean section is not done because we have a pelvic contraction so great that no child can be born for that woman. It is done for a disproportion between the passage and passenger, and of the nineteen cases which I have had, seven had had Cesarean section performed on them one or two years before. For ten years I was engaged in general practice, and it must be remembered that when we consider the sterilization of a patient, nearly every husband will say, "Doctor, this thing will never happen again." I would not attach much importance to what the husband says in considering the sterilization of his wife.

DR. HUMISTON (closing the discussion).—This patient was very sensible for a woman who had gone through what she had. Both she and her husband were anxious to have children, although she had suffered from a high forceps delivery before, she was brave, and when I explained the process we would adopt to get her a live child, she felt happy and consented readily to operation, but in moving away from Cleveland she fell into other hands and may have changed her mind. She did not know that her uterus had been removed, but the doctor stated that she would not have any more children. A surprise to me was the ease with which the high operation was done, and the rapidity with which it can be done. It is a most ideal operation, for the reason the incision is above the umbilicus, where there is very little strain on the abdomen, where the muscles are not as strong as they are below the umbilicus. A small incision will allow a good sized child to come through, for the reason that the muscles are very much attenuated, and then when you unite the opening in the uterus, the uterus contracts and is carried away from the site of the incision, and there is no danger of adhesions. It is an ideal operation. It is so much easier than the low operation. There are no clamps necessary; there is no fussing, and there is very little blood lost.

A STUDY OF A PSEUDOHERMAPHRODITE.[1]

BY

H. S. CROSSEN, M. D.,

Professor of Chinical Gynecology, Washington University, St. Louis, Mo.

(With ten illustrations.)

PSEUDOHERMAPHRODITISM is a subject which is exceedingly interesting from the developmental standpoint. It is also of much practical importance, and it is this latter phase which I wish to emphasize at this time. In many of these cases a mistaken diagnosis as to sex is made at birth, entailing much hardship when adult life is reached. Such a mistake was evidently made in the case of the individual here reported. If my conclusion is correct, this individual has been living for forty-two years under a false impression as to sex.

The terms "hermaphrodite" and "pseudo-hermaphrodite" have been used rather loosely at times, so it is well to call attention to their exact meaning. A true hermaphrodite is, according to Ahfeld's definition "an individual with functionating active glands of both sexes, provided with excretory ducts." No such case has been reported in which the diagnosis has been fully accepted, although there is considerable dispute among authorities concerning some. Several cases have been reported in which, among other anomalies, there were glands which on microscopic examination presented some of the characteristics of both ovary and testicle. But that condition does not constitute a double set of glands and excretory ducts.

A pseudohermaphrodite is an individual of one sex presenting some of the local characteristics of the other sex. Many such cases have been reported, and not a few of them have presented a most difficult problem in regard to the diagnosis of the sex. The individual himself (or herself, as the case may be) does not seem to be able to help much in determining the real sex in the most difficult cases. Neugebauer was able to collect 942 cases of pseudohermaphroditism. In at least 41 of the pseudohermaphrodites the true sex was positively determined only after

[1] Lantern Slide Demonstration.

abdominal section, though in only four cases was the operation undertaken specifically for diagnostic purposes. Numerous cases are recorded where the individual dressed and lived for many years as a man or as a woman, and then ascertained that the real sex was the opposite one. The most celebrated case, perhaps, is that of Carl Hohmann, a masculine hermaphrodite,

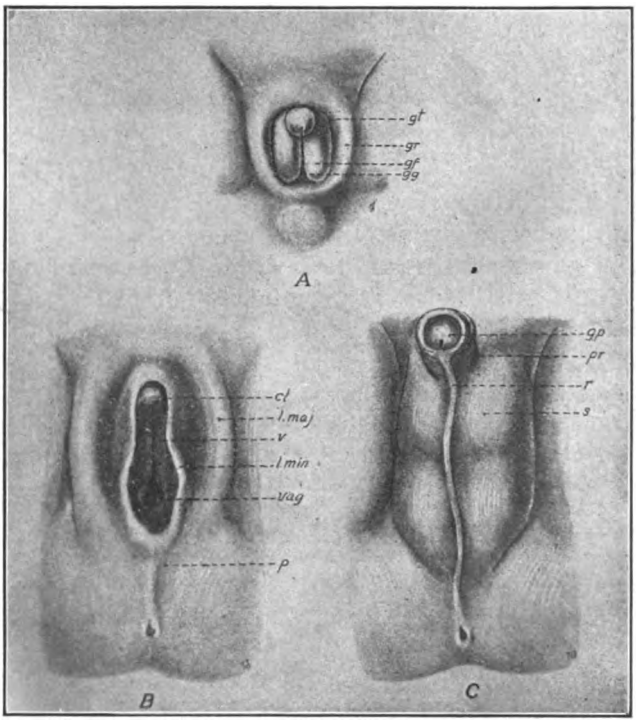


FIG. 1.—Development of the external genitals (after Ecker-Ziegler models) A, indifferent stage (eighth week); gt, genital tubercle; gr, genital ridge; gf, genital fold; gg, genital groove. B, female type; cl, clitoris; l. maj., labia majora; v, vestibule; l. min., labia minora; vag, vagina; p, perineum. C, male type; gp, glans penis; pr, prepuce; r, raphe; s, scrotum.

who from infancy to the age of forty-six years was considered a female and lived as such. The true sex being then ascertained, he assumed male attire and married as a man.

The practical lesson of this subject is that care should be exercised to make a correct diagnosis of sex at birth. When a child presents any anomaly of the genital organs, a most careful examination should be made and all the possibilities considered, in

order to determine positively the real sex. Figure 1 shows some of the stages in the development of the external genitals, both male and female. From this it is evident that a failure of union of tissues beneath the small penis (causing the condition known as hypospadius) produces a resemblance to the infantile female genitals—a resemblance which might easily cause a mistaken diagnosis as to sex.

Most of the pseudohermaphrodites are really males (having testicles in the abdomen or in the scrotum), the resemblance to the female external genitals deing due to some form of hypospadias, accompanied with an abnormal opening or pocket which

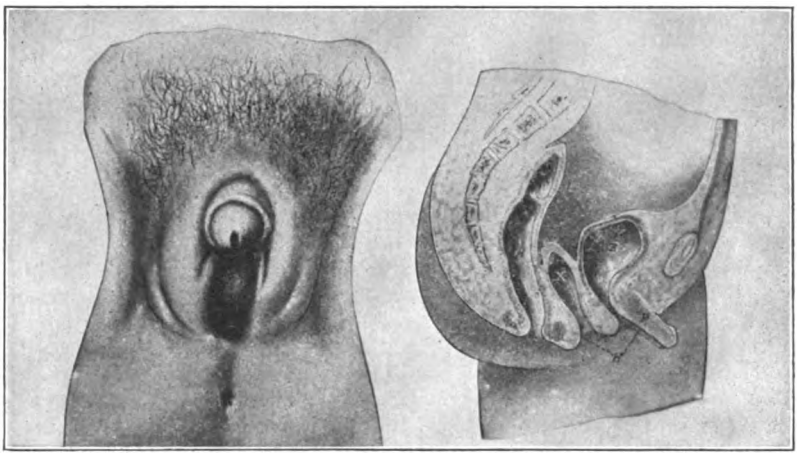


FIG. 2.—Showing front view and sectional view of marked hypospadius, which is the usual condition present in male pseudohermaphroditism. B, bladder; R. rectum; P, penis, with distal portion of urethra absent; H urogenital vestibule, containing the opening of the urethra and of the sinus pocularis—this condition of hapospadius necessitating a careful examination to determine the sex of the child; X, sinus pocularis, enlarged and opening into the perineal vestibule, and consequently likely to be mistaken for a vagina.

is mistaken for a vagina. Figure 2 shows the usual arrangement in such cases. The penis being very small is mistaken for a rather large clitoris and the abnormal opening below for the vestibule of the vagina. The resemblance does not stop there, for opening into the supposed vestibules are two canals—the urethra above and the supposed vagina below. This latter is really the sinus pocularis (prostatic utricle), but it may be so enlarged as to resemble a small vagina.

The principal anomaly in female pseudohermaphrodites that

causes some resemblance to the male genital organs is hypertrophy of the clitoris, accompanied with adhesions of the labia minora or labia majora over the vaginal opening or with imperforate hymen or with labial hernia or hydrocele or other labial swelling covering the vestibule.

In some cases of pseudohermaphroditism the positive determination of the sex is very difficult and may even be impossible except by abdominal section. The general rule in cases of doubt is to class the pseudohermaphrodite as a male until unmistakable

FIG. 3.—General appearance of the individual.

evidence of the opposite sex appears. This will avoid a mistake in the great majority of instances. In the case of four supposed female pseudohermaphrodites who were subjected to abdominal section, three proved to be males.

The particulars of the case here presented are as follows:

Individual, aged forty-two, known as Miss Susie H., states that she has some of the organs of each sex, but has always supposed that she was a woman and has dressed and acted as such. The

individual came under my observation through the kindness of Dr. A. W. Craddock, a general practitioner of this city, who sent her to me. Figure 3 gives a very good idea of the general appearance of the patient as she sat in my consultation room. The face is smooth and practically clear of hair, without shaving.

In giving the history I shall use the feminine pronoun as that is the way the history was taken, although after examination I became satisfied that the individual was a male. When ten or twelve years of age the patient noticed that she was different

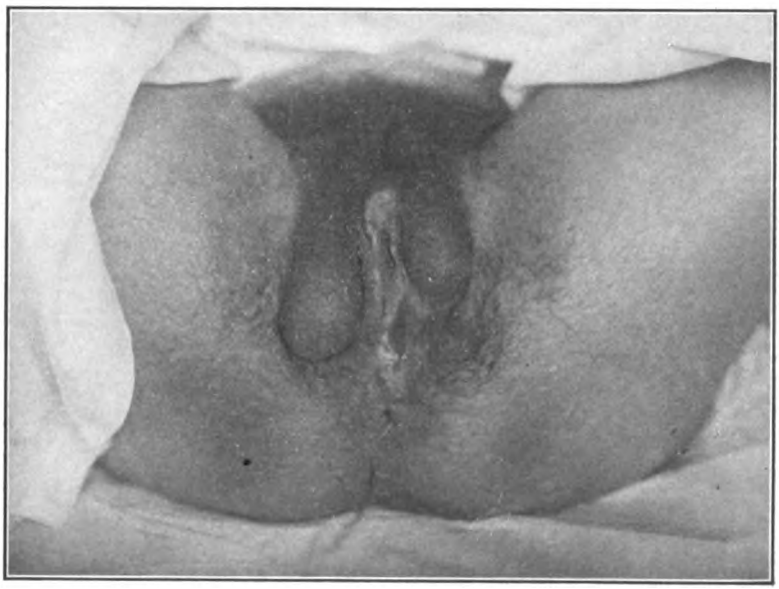


FIG. 4.—The external genitals. Notice the rudimentary penis, and the divided scrotum with a well formed testicle in each side.

about the genitals from other girls and she mentioned this fact to her mother. Her mother told her that it could not be helped and not to mention it to any one nor to expose herself in any way. The patient associated with other girls right along and never noticed any particular difference in tastes or feelings between them and herself. From the age of fifteen to that of twenty-two she went with an estimable young man. She had much affection for him and he was anxious to marry her but she refused because she knew that there was a deformity which made her different from what she ought to be.

Supposed menstruation appeared at the age of seventeen and

continued regularly each month for two years, *i.e.*, during the seventeenth and eighteenth years. The duration of this bloody discharge was three or four days and the amount of blood lost she thinks was about the same as in the menstruation of the girls with whom she associated. There were no pains with this recurring bloody discharge except at times when she caught cold. At the end of two years the supposed menstruation stopped, and she then had considerable pain and aching for some months—headache and backache and pains in the thighs. The

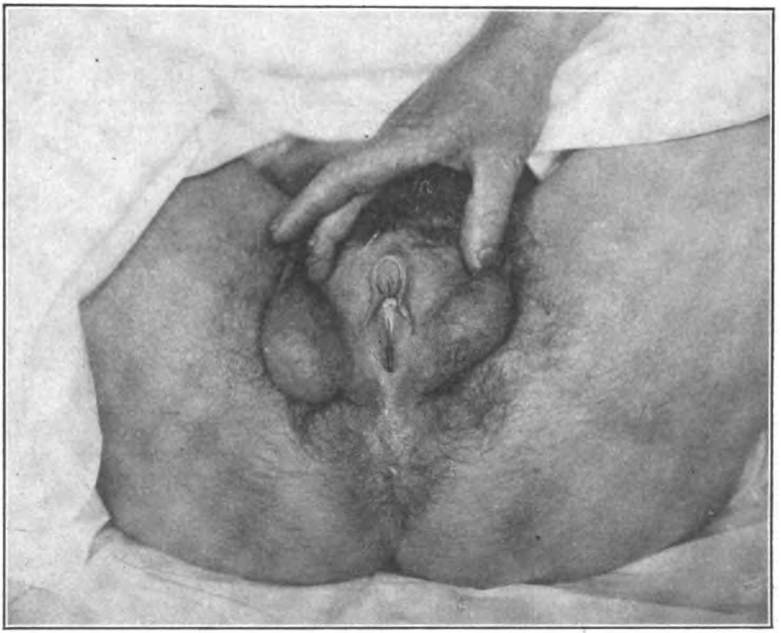


FIG. 5.—Showing the urogenital vestibule at the base of the rudimentary penis.

physician pronounced them "growing pains," as she was growing rapidly at the time.

No other special change was noticed until the age of twenty-eight, when the patient began to have erections of the rudimentary penis and emissions. No passion for women was noticed. She was associated with women right along, dressing, bathing, etc. All the sexual feelings were directed toward men, for she felt that she was a woman, though a somewhat peculiar one. From the age of twenty-eight to thirty she masturbated some, but stopped at the age of thirty, as a physician told her that

it was injurious. From that time on erections and emissions occurred at times, getting less as she grew older until now at the age of forty-two they occur only occasionally. It is stated that there was never any attempt at coitus.

On examination I found the external genitals as shown in figure 4. In the center was a structure that might have been an enlarged clitoris or a very small rudimentary penis. Below this was what appeared to be a divided scrotum, the roll on each side containing a body that closely resembled the testicle in size,

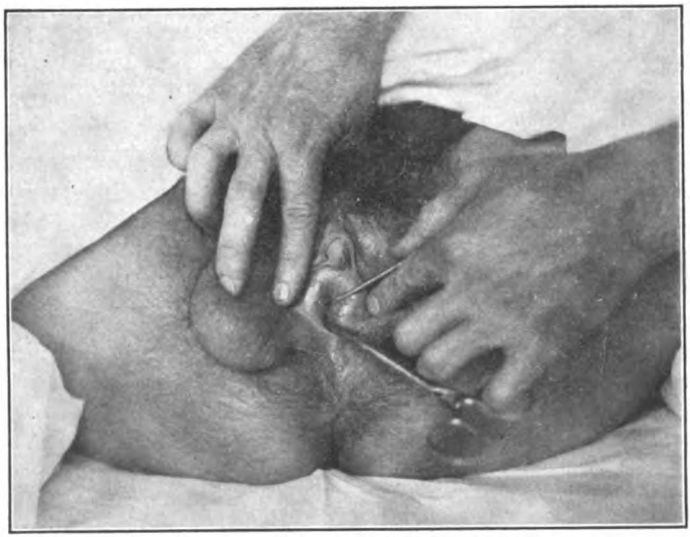


FIG. 6.—The urogenital vestibule spread open, showing the opening of the urethra (uterine sound introduced) and the opening of the sinus pocularis (forceps introduced). Compare this with the sectional view of hypospadius in Fig. 2.

shape and consistency. The epididymis could be felt on each side and also the spermatic cord extending up to the ring. The right epididymis contained a hard nodule as though from previous inflammation, and the patient stated that that side was at one time swollen and tender. In the median line, just back of the rudimentary penis, was an opening or vestibule (Fig. 5) into which opened the urethra and another canal as shown in figure 6. The other canal (in which the point of the forceps is placed in figure 6) was situated just back of the urethra. It was small and short, admitting the tip of the finger for about three-quarters of an inch. It seemed to be a closed pocked, for in exploring it

carefully with a uterine sound I found no further extension. This pocket seemed to me to be clearly the sinus pocularis (prostatic utricle) which is usually found thus enlarged in these cases of hypospadius, as shown in figure 2. In the anterior margin of the upper wall of this pocket, just lateral to the urethra, were two very small openings, one on either side, which I took to be the

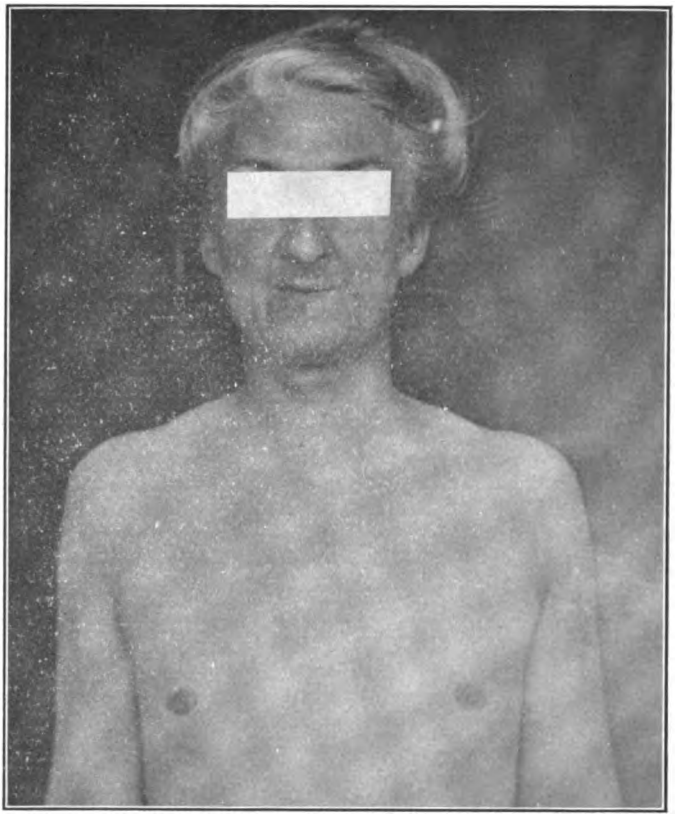


FIG. 7.—The breasts are of the male type—flat and hardly appreciable on palpation. The photograph shows also the hairless condition of the face.

exists of the seminal vesicles. This is just where they would be expected to be in such a condition of hypospadias. On recto-abdominal examination I could not feel any uterus nor adnexa. However, it is not possible to positively exclude very small rudimentary organs by simple bimanual examination in a muscular individual. That point can be settled absolutely only by abdominal section. A small mass felt at the base of the bladder,

I judged to be the prostate. It was in this mass that the small pocket above mentioned was situated.

Thus far the examination findings indicated a male pseudohermaphrodite of the variety shown in figure 2—that is, a condition of hypospadius, with a rudimentary penis surmounting a vestibule into which opens the urethra and back of that the prostatic utricle (sinus pocularis). I then took up other points that might assist in determining the sex. The breasts were clearly

FIG. 8.—Showing the contour of the breasts.

of the male type (Figs. 7 and 8). The patient stated that the right breast had enlarged somewhat at one time for a short period, but neither breast ever enlarged as in the female. The general build of the body was found to be masculine. Figure 9 shows the broad shoulders and narrow hips, and the contrast is shown even better in figure 10. The width of the body at the shoulders was 41 cm. and at the hips 32 cm. In the female these measurements are practically alike, being for a woman of this size about 36 cm. to 36 cm. The regular pelvic measurements

in this individual were as follows: diameter of spines, 20 cm.; diameter of crests, 28 cm.; diameter of trochanters, 32 cm.; external conjugate, 19 cm.; diameter of outlet (between ischial tuberosities), 8 cm. These measurements show that the pelvis is distinctly of the male type.

This individual has been examined by several physicians in different cities, and conflicting opinions have been expressed as to the sex. My own conclusion from the study of the case is that

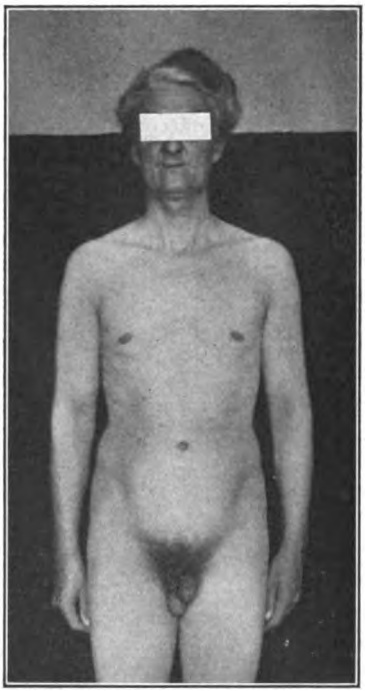


FIG. 9.—Showing the general build of the body. Note the broad shoulders and the narrow hips. This photograph shows that the upper limit of the pubic hair is horizontal, as in the female. The divided scrotum and contained testicles hang down almost as in a normal male, though rudimentary penis is hidden.

the individual is undoubtedly a male, though he supposes himself to be a female and has always dressed and lived as such. That this conclusion is correct is indicated unequivocally by the general build of the body, by the pelvic measurements, by the character of the breasts and by the external genitals (which are typically those of a male with hypospadias)—that is, by every important consideration which is capable of positive objective

demonstration. The internal pelvic examination (bimanual examination) confirmed these external findings. I found nothing that I could interpret as a probable rudimentary uterus or ovary or tube, though as before remarked the complete absence of such could be determined absolutely only by abdominal section.

The only facts that were at all confusing were: 1. no beard or other distribution of hair as ordinarily found in the male, and 2.

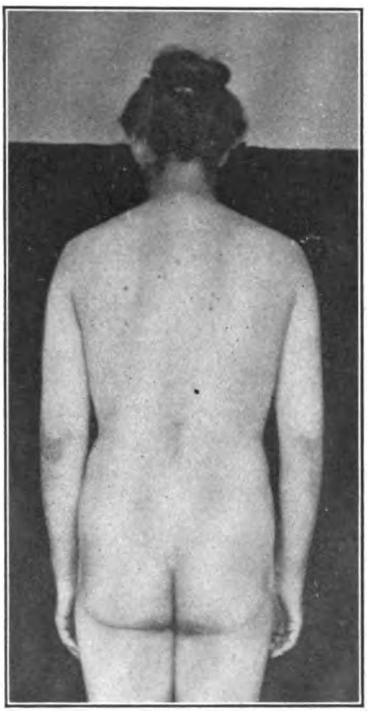


FIG. 10.—Back view, showing the broad shoulders and narrow hips, even better than in Fig. 9. The width of the body at the shoulders was 41 cm., and at the hips 32 cm. The regular pelvic measurements showed a typical male pelvis.

a bloody discharge simulating the menstrual flow, that is lasting for three or four days and recurring once a month for a period of two years. The absence of beard is not of much importance, as some men who are not hypospadiacs are beardless and such an anomaly would be more likely to occur in a person with other anomalies. But the regularly recurring bloody discharge simulating menstruation is not so easily ac-

counted for—in fact I have found no satisfactory explanation for it. However, this alleged menstruation is not a demonstrated fact, but depends wholly on the patient's statement. Leaving out of consideration any want of veracity on the part of the patient, we know how unreliable is the history of the details of a supposed unimportant occurrence that transpired twenty years ago. The patient was expecting menstruation and any bloody discharge from the irritated urogenital sinus would be interpreted as menstruation, whether regular or not. It is possible that there might have been some inflammatory trouble or polypus in the prostatic utricle giving a bloody discharge at times. Again, some authorities hold that there is in the male a monthly sexual wave, somewhat anologous to that in the female. If there is such a wave, it might cause a bloody discharge from an irritated prostatic surface to recur monthly for a time.

So far I have not been able to find in literature a single case of a male pseudohermaphrodite in which there was a bloody discharge simulating menstruation so closely in regularity and amount. There are many cases that have presented a bloody discharge at irregular intervals, in rare instances extending over several years, but in all such cases there was evidence of disease or injury (as from coitus) to account for the bloody discharge. In this particular the case seems to be unique and suggests the possibility of some rudiments of the female organs in connection with the better developed male organs. If such should be the case (which I do not think at all probable) then the individual would approach the condition of a true hermaphrodite. For this reason I am very anxious to see the exact conditions inside the pelvis, and should appreciate very much being informed of the findings, if this individual ever comes to abdominal operation or postmortem examination.

I sent the individual for examination to several of my professional friends whom I knew would be interested in the subject and he saw also a number of physicians independently, so that he was examined by a large number of gynecologists and genito-urinary specialists. So far as I have heard, the opinion that the individual is a male is held by all of these except two. One of my friends, a gynecologist, holds the opinion that the individual is a female, and another holds the opinion that the subject is a true hermaphrodite—rudimentary female organs having been active in early life (the two years of the so-called menstruation) and then being overshadowed by the develop-

ment of the male organs. The supposition that the individual is a female is based principally upon: a. the absence of beard and of hair in other situations usually plentifully supplied in the male; b. the distribution of the pubic hair, which ends in a horizontal line above; c. the enlargement of the right breast at one time for a short period; d. the sexual feelings of the individual, which have always been directed toward the male sex; e. the supposed menstrual flow occurring regularly for two years; f. the introduction of a fine probe for a distance of 2 1/2 inches along some small canal opening from this urogenital vestibule, and g. the feeling of this probe, by bimanual examination, extending up into the pelvis into some thickened tissue that was interpreted as a rudimentary uterus or tube. In addition it was assumed of course that the testicle-like bodies in the external genitals were really ovaries instead of testicles.

The only one of these points to which I attach much importance is the recurring bloody discharge simulating menstruation. This has already been referred to at length. As to the fine canal along which a small probe was passed for two inches, that might have been a congenital remnant of a Muellerian duct present in the male, just as we find occasionally a remnant of the Wolffian duct present in the female as a fine canal or cord beside the vagina. And such a remnant would be more likely to occur in a hypospadiac male with the enlarged prostatic utricle than in a normal individual. Again, this fine probe may have been passed into one of the seminal vesicles, which in this case opened into the urogenital vestibule. The doctor did not mention having noticed these small openings and it might have been one of these canals that he was probing. This would carry the probe into the pelvis in the direction mentioned.

As to the nature of the testicle-like bodies in the divided scrotum, it seemed to me very clear, as before stated, that they were testicles and that the epididymis could be felt and the spermatic cord traced up to the inguinal ring on each side. Confirming this opinion is that of Prof. H. McC. Johnson, of the Department of Genitourinary Surgery in Washington University, whom I asked to examine the patient, and who stated that the testicle, epididymis and spermatic cord are well developed on each side and that there can be no question as to their identity, and that furthermore the patient has unmistakable evidence of a former epididymitis on the right side. Dr. H. J. Schreck, of the Department of Genitourinary Sur-

gery in St. Louis University, who published some notes on the case, also states that these structures are undoubtedly testicles, and that the epididymis and spermatic cord can be clearly traced on each side.

Taking everything into consideration, I think there can be no substantial dissent from the conclusion that the individual is a male pseudohermaphrodite, the particular deformity being a condition of hypospadius. And yet this individual has dressed and lived as a female for forty years. This certainly emphasizes strongly the necessity of a most careful examination in anomalous cases, to determine correctly the sex of the child, either immediately after birth or as soon thereafter as conditions permit.

Having stated my conclusions to the patient, he asked me this question: "Doctor, what would you advised in regard to my future dress and conduct?" I simply mention this question in order to call attention to another interesting and practical phase of this subject.

DISCUSSION.

DR. A. B. MILLER, Syracuse.—I am interested to know whether Dr. Crossen found a family tendency for conditions of this kind.

Without wearying you, I wish to relate an experience which I had early in my work. A young lady, about the age of twenty-four, engaged to be married, visited me at my office for an examination, stating she had consulted several physicians, had never menstruated, was engaged to be married, and would like a thorough examination. Examination revealed identically the condition that has been portrayed by the author of this paper. I called in several of our local physicians to observe the condition, and we resorted to every means of diagnosis. By conjoined manipulation of the rectum and bladder we appreciated that the internal organs were absent. This patient remained under observation for some little time. She gave up the idea that it would be wise for her to marry, and as a result desired to do something which would improve her mental condition. She was kept under observation for several years. I was anxious to know more about the family history, and if there were other members of the family who had a like condition. There was an older sister, quite masculine in appearance, larger bones than this young woman of twenty-four. All members of the family, as I observed, had combined characteristics of the female sex. Their faces were smooth, their manners effeminate, but their voices were heavy, their breasts immature, and the local conditions were indicative of the type of case presented by Dr. Crossen. It was

some little time before opportunity came to examine the organs of generation of the other members of the family. The mother was taken ill, and I found she was suffering from cancer of the uterus. She had been the mother of four children. I had taken care of the oldest daughter in confinement, and I knew her organs of generation were practically normal. After a little time I was called to see the youngest member of the family, who was perhaps six or eight years of age. I saw it tossing a ball and watched it engaging in sports that were more suitable for boys than girls. It impressed me that this child was a little masculine. The mother said, "I wish you would examine the child because something has come down." I found this little one had the same condition locally as the young lady of twenty-four. There was a hernial protrusion along with a testicle which had descended, if it was a testicle. The second oldest daughter in the meantime had married, the one with large bony frame, and I was anxious to know something about her. She removed to an adjoining county and I thought my opportunity was lost. In the course of two years she came to my office and stated that she was about to become a mother. Her reason for such a conclusion was that her mother-in-law and father-in-law had been chiding her a little because she was getting so stout, with the belief that she was going to become a mother, and she had reached that conclusion herself. I found she had never menstruated, and while she had been living the life of a married woman with satisfaction to her husband in every regard, examination of her organs of generation proved that she was also of the type represented in the paper. She had a pendulous abdomen. She had the spurious symptoms of pregnancy, but I was obliged to say to her that it was not possible for her to become a mother. A baby carriage had been bought by the interested grand-parents, and preparations made for the advent of the little one. With the maternal instinct it was a matter of humiliation for this woman to return to her home. I asked her if she would not adopt a child. She thought she would, and would talk it over with her husband. After consulting her husband and he learning the facts regarding her condition, she returned to me and stated they would like a child, even under these conditions. I was running a private hospital at the time, and I said to her, you are supposed to be seven months along in pregnancy, at the end of your period you return to Syracuse, and I will put you in my private hospital, and as this rudimentary penis seems to be an objectionable feature to you, and under stimulation seems to be a sort of obstruction to the husband, we will remove it, and, if possible, bring you an illegitimate child of some one who has been unfortunate, and at the time the baby is born elsewhere we will remove this rudimentary penis. So when I learned there was a young woman coming into one of our hospitals to be confined, and it was her desire that she should never see her offspring, this woman was brought to my private hospital at the time the girl gave birth to her child,

and in the dead of night, and in the presence of the superintendent I removed the rudimentary penis. When the nurse found the infant in bed in the morning, she did not know but what it was the true child of the mother. She remained in the hospital until her incision healed. A lawyer was called in the second morning and papers of adoption of the child were properly made out. The lawyer visited the mother who had given birth to the child and everything was conducted in a proper and legal manner. That child has grown to young womanhood. The younger member of the family has likewise grown to womanhood and is occupying a position of responsibility. Is very capable, and enjoys the confidence and esteem of those associated with her. The young lady of twenty-four years, when she consulted me, has been married for seven or eight years; she has lived in perfect harmony with her husband, who has not the remotest idea but that she is a perfect woman, she has a rudimentary vagina; it certainly answers every purpose. This was the condition of the one who adopted the child. The youngest member has grown into womanhood, and she feels she has suffered some embarrassment in her work; that she rarely or never feels sexual desire with her own sex, but in the presence of men it is always stimulated, and sometimes so strong it is hard to control, and just before going on her vacation she visited me and asked if, in my judgment, it was not best to have this rudimentary penis and the external organs which hang down in the labia removed in order that she might have better control of herself.

I have been impressed with the fortitude with which these three individuals have borne their condition, and a question I would like to ask Dr. Crossen is whether he has known from his experience and from a study of the literature that these conditions run in families.

DR. CROSSEN (closing the discussion).—I have nothing to say except to thank Dr. Miller for the presentation of these interesting cases. In this particular instance there was no history of any family deformity.

DRAINAGE: THE ESSENTIAL ELEMENT IN THE SURGERY OF THE BILIARY TRACT.

BY

CHARLES N. SMITH, M. D.,

Surgical Chief of Flower Hospital; Gynecologist to St. Vincent's Hospital, Toledo, Ohio.

THE underlying pathological condition primarily giving rise to the symptoms and demanding surgical intervention for its cure, in a large proportion of the cases of gall-tract disease, is an infection of that tract. In cholelithiasis, even, the gallstones bear merely a causal relation to the associated inflammation, while their removal is but an incident in the cure of the infection. This infection, while invited by the irritation of the gallstones, even when of the mildest intensity, is seldom cured solely by the removal of the calculi. A low-grade catarrhal cholecystitis precedes the formation of the gallstones and is the essential etiological factor therein. When gallstones have formed they at once become foreign bodies whose presence is an insult certain to be more or less vigorously resented by the gallbladder. By irritation of the gallbladder mucosa the calculi not only invite the migration of bacteria to that organ, but also determine the infection of its structures and the resulting inflammation of them.

While the transit of a stone through the common duct unquestionably may give rise to the most intense suffering, and is the determining factor in true gallstone colic, such is not the cause of the predominant pain, even though severe, in the majority of instances in gallstone disease. In operating on patients who recently have had repeated attacks of severe pain —attacks which have been accredited to the passage of stones through the common duct—not infrequently a comparatively large stone is found immovably imbedded in the pelvis of the gallbladder or in a convolution of the cystic duct. While many other and smaller stones capable of escaping through the common duct are found in the gallbladder, but a glance is necessary to convince one that it has been a mechanical impossibility for any stone to have passed the one imbedded in the pelvis or the

convolution, so effectually has it guarded and blocked the outlet into the common duct. Some other explanation than that of the passage of a calculus through the common duct must be given for the frequently recurring attacks of colic-like pain. That explanation is found in the inflammation of the gallbladder walls. The causation of the pain lies in an exacerbation of infection in the gallbladder and ducts, or in a disturbance of the relative positions of the gallstones, or in the impaction of a stone in the pelvis of the gallbladder or in the cystic duct with an increased tension in the gallbladder, while the severity of the pain depends on the intensity of the gallbladder inflammation.

Early in the history of gallstone formation the symptoms are slight and invariably referred by the patient to the stomach, that great central alarm station in abdominal disease. When, however, the bacteria which, by either an ascending infection from the duodenum or through the blood stream, have gained access to the gallbladder and ducts, and because of the presence and irritation of the calculi have determined the onset of an inflammation, there arise certain apparent additions to the symptomatology, in that distinct and localized gallbladder symptoms become manifest. There is an uneasiness, a distress, occasionally a slight pain, all plainly referable to the region of the gallbladder; the "catch in the breath" is appreciable and tenderness on pressure is demonstrable. The severity of all these local symptoms vary with the intensity of the infection, and in the high grades of infection the pain is as severe as, or greater than, that frequently attending the transit of a stone through the common duct.

In the mild grades of infection a thick and ropy mucus is secreted in abundance by the glands of the gallbladder. Clumps and ropes of this mucus passing through the common duct give rise to pain which in some instances approaches the severity of gallstone colic.

Latent gallstones may remain quietly housed in the gallbladder for years, practically producing no symptoms save those referred to the stomach and some occasional slight gallbladder disturbances. Although these symptoms are fairly continuous, they are so slight in their intensity that they may be overlooked or misinterpreted by one careless in his anamnesis. While latent gallstones never may have produced strikingly painful gallbladder symptoms they invariably are attended at some time in their history by an infection. The

most latent of gallstones, even when accidentally observed in the course of an operation for other cause, never are found in a blue and thin walled gallbladder. On the contrary, the walls are thickened to a certain extent and have a grayish or mottled appearance, while the peritoneal coat to a greater or less degree has lost its lustre. This thickening and the alteration in color are due to inflammatory changes in the gallbladder walls. Not infrequently peritoneal adhesions will be found between the gallbladder and the surrounding structures—mute but eloquent and indisputable indices of a past infection involving not only the cholecystic mucosa, but also the serosa.

Some of the cases of so-called catarrhal jaundice attributed to gastroduodenitis undoubtedly are due to an infection of the gallbladder and ducts determined by the presence of latent gallstones. The infection, extending from the gallbladder through the cystic to the common duct, produces sufficient inflammatory swelling in the mucosa of the latter to interfere with the ready outflow of bile and a mild jaundice necessarily results.

The medical treatment of gallstones acts only by allaying temporarily the gallbladder inflammation, diminishing the quantity and viscosity of the mucus and rendering latent the unaffected gallstones invariably remaining in the gallbladder. While gallstones rendered latent by such medical treatment may remain seemingly innocuous for years, they not infrequently provoke chronic sclerotic contractures in the gallbladder and cystic duct, eventually resulting in a functional, if not a structural, obliteration of those structures. In other instances, and in not a few of them, the period of false security attending latent gallstones is brought to a tragic termination by acute and virulent infection, by gangrene, by perforation and peritoneal infection. Surgery, called upon at this time, labors under a serious handicap not of its own making, but placed upon it by this seductive but inefficient medical treatment. While we insist that the surgery of gallstone disease must go farther than the mere removal of the irritating and offending calculi and, by a drainage operation, cure the associated inflammation, we must as insistently demand of medical treatment that it do more than temporarily abate the inflammation, in that it also must remove the gallstones. The first of these conditions it meets in part; but the second it meets not at all.

In a small, but by no means negligible proportion of the cases

of gallbladder stone with infection, the inflammatory action seems to be concentrated within the cystic duct. With this extension of the inflammation, occlusion of that duct may occur and thereafter the gallbladder forever will remain eliminated from the biliary circuit, void of function and a constant menace to the comfort and life of its possessor. Depending on the activity of the infecting bacteria, either hydrops or empyema of the gallbladder, the latter occurring independently of, or sequentially upon, the former, may follow occlusion of the cystic duct from inflammation or from blockage by stone.

This occlusion of the cystic duct from inflammation excited by the irritation of gallstones, as well as the direct blockage of the duct by stone, so frequently rendered permanent by contraction of the inflamed duct about the offending concretion, must be looked upon as a terminal event in the progress of a calculous cholecystitis.

In hydrops, the walls of the gallbladder, greatly distended by the outpouring of mucus, frequently become extremely tenuous. The most serious complication, and one which threatens every case of hydrops, is a secondary empyema resulting from reinfection of the gallbladder and its imprisoned contents. When a secondary empyema thus results, rupture, with infection of the general peritoneal cavity, is a practically certain termination, unless anticipated by surgical relief.

Cholecystectomy formerly was considered advisable, even necessary, in practically every case of hydrops and of empyema. In present-day practice, however, many a gallbladder cut out from the biliary circuit and rendered practically functionless by a calculous or an inflammatory block in the cystic duct, can be restored anatomically and functionally by a drainage operation. In other words, neither hydrops nor empyema necessarily call for the removal of the gallbladder.

In those cases of hydrops resulting from occlusion of the cystic duct by a calculus, the gallbladder generally can be restored to usefulness by removal of the stone and subsequent drainage, provided that the bladder walls have not been rendered extremely thin from overdistention by the imprisoned mucus. In practically all of those cases in which the extraction of the calculus is followed by the escape of bile from the duct, the gallbladder should be drained rather than removed. In hydrops with comparatively thick walls, the presumption being that the obstruction has not been of long duration and that an inflamma-

tory element also is concerned in the obstruction, the gallbladder should be drained, even though the flow of bile is not reestablished during the performance of the operation. Almost invariable in such cases bile will be discharged from the drainage tube within seventy-two hours. This statement holds good as regards even enormous distentions of the gallbladder, provided only that the walls are thickened rather than thinned.

CASE I.—Mrs. X., aged 58 years, operated on June 13, 1910. For over a year this patient had noticed a slowly increasing swelling in the region of the gallbladder. Examination, made two days prior to operation, showed a tense tumor continuous with the liver, extending below the level of the umbilicus and practically filling the right loin. A diagnosis of hydrops of the gallbladder was made and operation performed. The enormous gallbladder contained 32 1/2 ounces of dark mucus. A gallstone firmly fixed in what was believed to be the remains of the cystic duct was found and removed. To completely remove this gallbladder from the liver meant to leave a raw liver surface some four inches in diameter. To amputate the gallbladder flush with the liver structures was to leave a secreting mucous surface pouring its secretions into the peritoneal cavity. Therefore I amputated the gallbladder about 1 inch away from the liver, closely adjusted the opposite edges by continuous suture, quilted the free portion of the bladder wall to that portion adherent to the liver, mucosa to mucosa, with the hope of a subsequent obliteration, and inserted a small drainage tube into the remaining small cavity of the gallbladder. By this procedure the liver surface was completely covered by the opposing gallbladder wall, with peritoneal surface presenting toward the peritoneal cavity. One hour after the completion of the operation bile was discharging freely from the drainage tube. Drainage was maintained for three weeks, the patient making a smooth and uneventful recovery. This patient unquestionably has a functionating gallbladder resulting from this resection and drainage.

Only a large experience in the surgery of the biliary tract will enable one to determine the proper procedure in the borderline cases. It would seem as advancing the interests of the greater number to drain even these borderline cases, as not infrequently the biliary current through the cystic duct is restored in cases apparently hopeless and in which the restoration comes more as a surprise than as an expectancy. If restoration of biliary flow

and gallbladder function is not accomplished, a mucous fistula remains and a secondary cholecystectomy becomes necessary. This certainly is not a serious risk to assume in view of the distinct advantage which may accrue from the conservative operation of drainage.

In a large proportion of the cases of empyema the gallbladder can be saved and its function restored by drainage. The more acute the process and the shorter its duration, the greater the prospect of cure. When suppuration occurs in a gallbladder which previously has been obstructed, the obstruction having existed for a long time, the performance of a cholecystectomy becomes a necessary procedure.

In several instances of perforation of a suppurating gallbladder I have removed the calculus obstructing the cystic duct, drained the gallbladder through the perforation and had a complete restoration of function in every case. The following case presents many interesting features and shows how completely such a gallbladder can be restored, both anatomically and functionally, by efficient drainage:

CASE II.—Miss D., aged fifty-four, a patient of Drs. Rohn and Reynolds, of Defiance, Ohio, was operated on November 4, 1908, for rupture of the gallbladder occurring about sixty hours previously. For twenty-seven years this patient had been the subject of gallstone disease, in its "innocent" or "latent" form, as indicated by the stomach symptoms so invariably present and so frequently mistaken for indigestion, gastralgia or gastroduodenitis. During this twenty-seven years she had never missed a day from her duties as teacher in the public schools, so slight had been the disturbances created by the gallstones. That chronic pancreatitis had been present for a considerable period was then shown by disturbances in digestion and in carbohydrate metabolism, by loss in weight and repeated hemorrhages into the skin, by local signs and a positive Cammidge reaction in the urine. Suppuration in the gallbladder had been indicated by the usual symptoms through a period of four days. Rupture was announced by sudden, severe pain, exquisite tenderness and a degree of collapse closely approaching death.

The walls of the enlarged gallbladder were thickened and edematous. The rupture was in the fundus. Pus and bile escaped from the gallbladder and quantities of seropurulent fluid and bile from the peritoneal cavity. A second incision was made

low in the abdominal wall into the pelvic cavity and fluid of the same character obtained. The cystic duct contained four gallstones, but was not permanently blocked thereby, as was shown by the presence of bile in the gallbladder and the peritoneal cavity. Gallstones were found in the peritoneal cavity and the gallbladder. The head of the pancreas was indurated, lobulated and decidedly enlarged, unquestionably from chronic pancreatitis.

Because of the existence of chronic pancreatitis, necessitating biliary drainage for its cure, and because the cystic duct was not occluded, making possible the restoration of function in the gallbladder, the latter was not removed but simply drained. In addition to the gallbladder drainage a large split rubber drain was placed alongside the gallbladder, another in the right kindey pouch, and a third in the pelvis. The patient was placed in the Fowler position and normal saline solution administered by continuous flow through the rectum. Drainage of the gallbladder continued for fourteen weeks. The recovery was slow but, in the main, satisfactory.

This patient consulted me again in July, 1909. All symptoms referable to the biliary tract and the pancreas had disappeared. There were present, however, positive symptoms of nearly complete obstruction at the pylorus or in the duodenum. Vomiting of stomach contents immediately after every meal was a regular event. The patient had lost 50 pounds in weight since the day on which rupture of the gallbladder had occurred. Gastrojejunostomy was performed July 19. The adhesions resulting from the peritonitis, secondary to the rupture of the suppurating gallbladder, had so displaced and angulated the duodenum that a practically complete obstruction existed. No attempt was made to separate the adhesions and restore the duodenum to its natural condition and position.

The most valuable and interesting information obtained from this second operation relates to the condition of the pancreas. Within a period of eight months and following fourteen weeks of biliary drainage, the pancreas had been restored to a perfectly normal condition. The induration, lobulation and swelling had completely disappeared. Several attempts to obtain Cammidge's reaction in the urine were negative in result.

This case, so far as above related, was reported to the Association in 1909 and published in the Transactions of that year.

In 1910 it became necessary to remove this patient's appendix

and advantage was taken of this opportunity to explore the gallbladder region. After the separation of some rather extensive adhesions about the gallbladder and the cutting of the cord-like tissues marking the site of the gallbladder drainage tube, a remarkably healthy gallbladder was found. It was normal in size, slightly mottled gray in color, with walls but slightly thickened, elastic to the touch, and evidently functionating normally. The pancreas was normal in every respect.

The function of the gallbladder to a certain extent is a mooted point even in this day of progress and knowledge. Its capacity as a storage reservoir, from one and one-half to two ounces, is ridiculously small when compared with the amount of bile secreted in 24 hours. Operators have observed that, after removal of the gallbladder, the common duct may become greatly distended, seemingly in an effort to take on some function inherent in the gallbladder. Whether this function be that of storing bile, or of equalizing its pressure, or of secreting mucus for its admixture, matters not in this connection. Suffice it to say, that the gallbladder has a function and, having such, should be restored to usefulness whenever possible.

Especially urgent reasons for the restoration and preservation of the gallbladder are found in the etiological relation borne by infections of the gallbladder and ducts to pancreatic inflammation, and in the necessity for permanent drainage of the biliary tract in the treatment of some cases of chronic pancreatitis. Practically 80 per cent. of the cases of chronic pancreatitis are the result of infections of the biliary tract, with or without gallstones. When, in chronic pancreatitis, gallstones are present, the removal of the gallstones with temporary external drainage ordinarily is sufficient to effect a disappearance of both the biliary and the pancreatic infections. Naturally there are exceptions to this rule, and it is these exceptional cases which require permanent drainage through a cholecystenterostomy. When gallstones are not found on operation, necessitating the assumption that the pancreatic inflammation is the result of a noncalculous infection of the biliary tract, or that the gallstones have escaped but, with no abatement of the infection, permanent drainage is required. In fact, in all cases of protracted chronic pancreatitis with considerable swelling, induration and lobulation of the head of the pancreas, permanent drainage must be employed regardless of the presence or absence of gallstones.

Obstruction of the biliary tract is notoriously associated with

or followed by infection. Note the "steeple chart of infection" attending the halting progress of a stone through the common duct. In fact, it is questionable whether an ascending infection from the duodenum ever occurs save following a certain degree of obstruction slowing the outflow of bile through the common duct. Obstruction of the common duct by stone invites infection not only of the duct itself, but of the intrahepatic radicles as well.

The fact that, from the standpoint of mortality, the radical operation of cholecystectomy, in many instances, is as safe as the simpler drainage operation, cannot be advanced logically as the sole or predominant argument in favor of its performance. Many mutilating operations are safe but are not justifiable simply because of their safety.

It is not my intention to convey the impression that a gallbladder long the subject of inflammation, and in which the walls are thickened and contracted and frequently tightly drawn about one or more gallstones, should be, from choice, left within the abdomen in hope of a restoration of function. Such a damaged and functionless gallbladder leads all too often to primary carcinoma and death, and this danger must be forestalled by the performance of a cholecystectomy.

When one sees a gallbladder completely packed with calculi, the contracted walls hugging them tightly, with little pockets or nests under overlying adhesions, each nest occupied by a gallstone which has ulcerated its way through the walls of the gallbladder, he appreciates the fact that he is viewing a terminal event, and that at some time in the past that patient has passed through a stormy period of cholecystitis—a period during which a diagnosis of gallstones should have been made and a conservative operation performed. At that period the efforts of conservation would have been directed, and successfully so, toward saving the gallbladder, but at this late period they must sacrifice that organ to conserve the health and the life of the patient.

The conclusion that in gallstone disease restoration to permanent health can be accomplished only by the removal of the causal gallstones and the resultant infection, is based on the following contentions:

1. Infection attends at some time in their history practically all cases of gallstones;

2. The determination of the infection rests on the presence of gallstones and the mechanical disturbances produced by them;

3. The infection, although mild or temporarily held in abeyance, is liable at all times to sudden and dangerous exacerbations;

4. The infection is the cause, in the majority of instances, of the symptoms, the suffering and the danger;

5. The intensity of the symptoms is but a measure of the intensity of the infection.

Drainage is recognized as the one dependable procedure in the treatment of localized infections, and it must be looked upon as the essential element in the surgery of the gallbladder and ducts. Natural drainage through the common duct into the intestine cannot be depended upon as a curative measure even in cases of mild infection. The distal opening of the common duct at the summit of the duodenal biliary papilla averages, according to Opie, but one-tenth of an inch in diameter. While in its healthy state it affords free exit for normal bile and pancreatic fluid, it is subject to encroachment upon its lumen by inflammatory swelling, greatly interfering with the rapidity and volume of the discharge through the orifice. The tenacious mucus so abundantly secreted during inflammation of the gallbladder serves to delay the onward flow and escape of bile and of itself becomes an obstructive agent. When an infection involves both the ducts and the gallbladder, the mechanical interference from the swelling of the mucosa and the increased viscosity of the bile from the added mucus, result in a decided hindrance, if not a positive obstruction, to the escape of bile into the intestine.

As drainage is essential to the restoration of normal conditions within an infected biliary tract, and as it cannot be obtained through the natural channels with any degree of certainty, it devolves on surgery to establish and sufficiently maintain that drainage.

DISCUSSION.

DR. JOHN YOUNG BROWN, St. Louis.—Two of the most unsatisfactory conditions that I have to deal with, are the cases under discussion and the postoperative prostatic cases. I have on many occasions left gallbladders that I thought might be removed at the time, and afterward had to remove them. In many cases where we purse-string the gallbladder, establish drainage, and drop it back, the patients come back to us suffering from adhesions that give them as much trouble as the original condition.

As to the question of whether the gallbladder should or should not be removed, the surgeon must be governed by the condition found in the individual case. I quite agree with the essayist that the gallbladder should be left whenever it is possible, but I wish we could devise some means by which we could rid ourselves of these cases in which drainage is practised and that come back for a secondary operation with dense adhesions. I do not mean those cases where the gallbladder has been fixed to the abdominal wall, but those cases where we purse-string the gallbladder and drop it back.

DR. ALBERT VANDER VEER, Albany.—I did not have the pleasure of hearing this paper, but I was much in love with the title. I very well remember the time when we used to say to a patient, "We are going to operate upon you for gallstones, and we hope to be able to show you the gallstones after the operation, but we did not find gallstones in some of these cases. We went out into the adjoining room and when we informed the friends of the patient that no gallstones were found we were criticised. But we soon discovered that drainage in these cases of cholecystitis and in connection with cases of chronic pancreatitis was the right thing, and in six months after an operation a patient would say to us, "You did not find any gallstones, but I am well." I think that has been the experience of all of us.

With reference to the operation of cholecystectomy, I do not think it is very often required. I do not believe it is an operation we ought to do frequently. You may look over the statistics and you will find the mortality in the hands of the best operators from this operation is considerable. We will find it is a marked factor if we study these cases carefully. Drainage in these cases, although there may be no gallstones present, is the proper therapeutic agent that these patients require. If the biliary sinus keeps up, if you have a gallbladder that is not simply a secreting surface, and you have this watery-like discharge with bile, you have there a sac that can be removed now with no mortality. The patient will undergo a second operation, and the mortality in these cases is almost nil.

DR. HUGO O. PANTZER, Indianapolis.—The observations, experiences and deductions of Dr. Smith fully accord with mine. According to my view the removal of the gallbladder is only warrantable in rare instances. I believe that I have removed the gallbladder in no more than five or six cases. The resisting and regenerative properties of mucous membrane must be fully entertained in deciding upon these questions. The common acceptance of strictures and destructive changes in the mucous membrane is not warranted by the experience in drainage cases. There are many cases which do not discharge any bile by the tube before twenty-four to forty-eight hours. I recall one case in which there was no external discharge of bile until the eleventh day after the operation. These cases, in my experience, give no future trouble. Such experience must be taken to read that

either the destructive changes present at the time of the operation were of minor degree, or that great resuscitative power pertains to this anatomical structure. There comes to mind the resistance of the bit of appendiceal mucosa inadvertently left uncovered in rare cases. This is followed by active secretion of this small patch of mucous membrane and the accumulation of mucus, making a disturbance which finally necessitates a secondary operation.

I reported last year a case on which I operated three times for recurrent acute pancreatitis by gallbladder drainage. The last times the pancreas was felt to be distinctly smaller than on previous occasions, and I was rather fearful that we were having progressive atrophy of the organ. This patient every now and then had shown the characteristic stools of such a state; they were pasty, and of metal luster. That patient has been under observation for a year, since the last drainage operation. The stools now are practically normal all the time. I am here inclined also to assume great regenerative power of this gland.

With regard to operating on typhoid patients, I am almost driven to the point of saying that it cannot only be done with safety, but the operation *per se* is accompanied with benefit to the patient. With ordinary skill and expedition the operation necessary in these cases can be accomplished without affecting pulse, temperature, or respiration. The respiration at most may be increased for a day or so, but the pulse and temperature are commonly not affected. The mind clears up, the temperature drops, and the typhoid fever in its course is gratefully modified as a consequence of the operation.

As to the remarks made by Dr. Smith with reference to chronic pancreatitis these cases require prolonged biliary drainage. I recall the case of a patient, eighteen years ago who was doing splendidly with drainage, able to pursue his work as a carpenter, who died from pancreatic necrosis within twenty-four hours after operation for closing the biliary fistula. The patient had insisted upon having it closed. The primary operation had revealed an enlarged, hardened head of the pancreas, suggestive of tumor or malignancy. I felt this called for protracted drainage, at the least. When the patient demanded closure I put him off long as possible. Postmortem there was found a stone as large as the last joint of my little finger embedded in the substance of the pancreas. With present knowledge of such cases, we should feel warranted in doing exploratory incision.

DR. FRANCIS REDER, St. Louis.—I wish to call attention to a sign that has proven to me to be absolute so far as the recognition of a stone in the cystic duct is concerned. Sometimes a patient may present such a clear clinical picture that we can positively say that we have to deal with gallstones. I have noticed operators explore the gallbladder in the hope of finding a stone and after searching for a while give up the search, convinced that no stone was present, believing that it was simply a

cholangitic condition that simulated the clinical picture of a gallstone colic. From my experience I can say that when you have a distended gallbladder, and upon opening it there exudes a clear sticky fluid that looks like glycerine (a fluid that has not yet become infected), you can be assured that there is a stone tucked away somewhere in the folds of the cystic duct.

Last week I operated on a patient who had been operated for gallstones four months previously. At that time the surgeon failed to discover the stone. The gallbladder at the primary operation was much distended, the fluid being clear and thick. The gallbladder was drained and a sinus discharging a clear sticky fluid was present when the secondary operation was undertaken, and a stone removed from the cystic duct. The patient now has a discharge of clear bile, and I feel hopeful that the sinus will close.

DR. J. GARLAND SHERRILL, Louisville.—This subject is always one of interest. The profession is practically a unit on the treatment of gallbladder diseases at the present time. I can endorse fully what Dr. Smith has said in his paper, and it is a ine of treatment I have pursued for a number of years.

There is one point I would like to bring to your attention, and that is, what shall we do with the thin-walled gallbladder which has a few delicate adhesions on the outside? I recall a case that came under my care where I opened and did not drain the gallbladder. No stones were present; I broke up the adhesions, the patient was out of the hospital in a short time, but after being out of the hospital she had a severe jaundice, a typical attack of cholecystitis, which mortified me not a little. Whenever you open and find such a gallbladder with delicate or thick adhesions around it the gallbladder should be drained.

With reference to cholecystectomy, we know that in the early work gallbladders were opened, some were closed, and dropped back, and the patients went on suffering. Later they were nearly all drained and got well. Still later a large number of gallbladders were removed, a great many of the patients recovered, but many of them had complications. We have come back to the point which I think was stated very clearly in the paper, and that is, drainage is the essential element in treatment, and that wherever it is at all possible cholecystectomy should be avoided and drainage instituted. Of course, a gangrenous gallbladder will call for a cholecystectomy. A gallbladder which is very much contracted, with a number of adhesions around it, is likely to cause constriction and distention later, and it is probably best to remove it, but a gallbladder with thick walls, with marked empyema, ought to be drained, and I believe with Dr. Smith that this is the line of treatment which should usually be pursued.

DR. RUFUS B. HALL, Cincinnati.—I quite agree with the essayist in what he has said and also in his deductions. I think he has presented the subject in a very admirable way; but there

are one or two points I think that ought to be emphasized, one of them being that drainage is the essential factor in the cure of these patients. The gallstones are a simple incidence. I rose principally to say that even if the operator had a thin gallbladder that is diseased, it is not always desirable to remove it. If you remove the gallbladder you eliminate the best method of drainage. It is better in most cases to establish drainage in a diseased gallbladder by using that organ. Many times I have seen contracted gallbladders, where the gallbladder was not larger than the index-finger, and it would not reach the peritoneum by an inch and a half, yet the case was one that should be drained. In all such cases I have stitched the drainage tube into the gallbladder and cured the patients. The gallbladder can be treated by drainage, and it is often desirable to resort to drainage of it rather than to sacrifice the gallbladder. One can drain through the perforation. I have done it in several cases and cured the patient where my surgical instinct would lead me to know that the easiest way would be to remove such a gallbladder, yet the best way for the patient is not to do so. One may occasionally have to do a second operation and remove the gallbladder in cases so treated. However, I have only had to do that on two or three occasions in my whole experience.

DR. THOMAS B. NOBLE, Indianapolis.—I have had to remove the gallbladders in some cases in which I had previously drained them. I have seen many, many functionless gallbladders which were not producing and did not produce remote pathological sequelæ, but which were producing trouble on account of being filled with stones, infection and the like, and after removing these gallbladders the patients have done better than if I had resorted merely to drainage. These facts have led me to remove the gallbladder in recent years much more frequently than heretofore. I believe it is the Mayos who have called our attention to the proposition that the gallbladder mucosa is an assurance in itself against pancreatitis; that there is a substance secreted from the mucosa of the gallbladder which preserves the function of the pancreas directly and indirectly; that the gallbladder has the function of acting as a governor for biliary pressure. I believe this idea is distinctly theoretical in character and is not borne out by clincial evidence, as I have observed the clinical features of these cases. My disposition is not to save the gallbladder in some of these cases. The impression has been given out already that when possible we should save the gallbladder. Now, I do not know what for. I believe I am safe in saying that I have removed the gallbladder *in toto* between twenty-five and thirty times, and my experience has been that the after-effects, that the subsequent history of these patients has been more satisfactory than those in which a simple cholecystostomy has been performed. Any operation that is undertaken upon the biliary tract should be very thorough. Simple drainage of the gallbladder after the removal of the stones, if any are

found present, and stoppage there, is often followed by recurrence of symptoms due to stones that have been overlooked. How many of you have had small stones drained into your dressings, or into your rubber bag during the period of biliary drainage following operation? I believe that it is not uncommon. Those stones were overlooked somewhere. They were hidden in the folds of the mucosa of the bladder, or hidden in the cystic duct, or they were in the hepatic duct or ducts or in the common duct, and not so liable are they to be overlooked in the gallbladder, the cystic duct or common duct, but they can be overlooked in the hepatic duct. So if the gallbladder be loosened it may serve for traction, the hepatic duct can be dragged down and explored, and you will be surprised, as I have been, to find stones in the hepatic duct that have been overlooked. In four instances have I made such an observation, and have I removed such stones. The biliary channels can be drained just as easily and just as efficiently after the removal of the gallbladder as in cases in which the gallbladder is left, possibly not so quickly, but almost so. I have been in the habit of using a small rubber tube, splitting it and carrying one section up into the liver, and the other down into the common duct and suturing with a little chromic catgut the tube into the dilated open cystic duct stump, and making drainage in this way. It gives at once free and very efficient drainage, and can be kept up as long as desired, and when removed the assurance is had that there is not going to be any secondary operation for the removal of the gallbladder or any annoyance in trying to heal up an old mucous fistula. I believe that in cases in which a single stone has been polished by being churned down into the neck of the gallbladder, or in other cases in which a beechnut-like stone has passed through the cystic duct and has produced a chronic cholecystitis by erosion, that if you drain in these cases you are very liable to have developed secondarily a stricture of the cystic duct, which is going to give you trouble.

DR. JAMES E. SADLIER, Poughkeepsie.—I want to express my hearty approval of the principles laid down by Dr. Smith this morning, and yet I rise to speak with reference to some of the vagaries of gallbladder drainage, and of two cases in particular.

A man upon whom I operated during the past winter, who was forty-seven years of age, gave a history of fifteen years of gallbladder trouble. This man was, with the exception of his local trouble in the gallbladder, in perfect condition. His kidneys were normal, his heart was in good condition, and it seemed as though he was an excellent case from a prognostic standpoint. At the operation some forty-seven stones were removed from the gallbladder, and twenty-two from the common and hepatic ducts. The gallbladder was drained, also a drain through the incision into the common duct. He rallied nicely from the operation and for four or five days a normal amount of green bile passed through the drainage. About the fifth day the bile

ceased to be of green color, becoming more amber in appearance, and increased largely in amount. Each day the amount increased over the preceding day, and I regret that by reason of the tube coming out about that time the amount could not be measured, but the amount passed each day became very great. It was almost impossible to keep the man dry. The dressings had to be changed every hour or two, and he was gradually weakening from the excessive drainage. Upon the morning of the tenth day following the operation I was hurriedly called to the hospital; the man was in collapse evidently from the excessive loss of fluid from his system. I resorted very quickly to the intravenous use of salt solution, rallied him partially, but it required good hard work throughout the entire day to get him thoroughly resuscitated. The drainage continued in its excessive character, and for a matter of two weeks it was simply a question of putting salt solution into his veins or subcutaneously and per rectum to keep him alive. After about two weeks of this excessive drainage, the amount gradually lessened, and he made from that time on an uneventful recovery. But this excessive drainage is something I had never seen before. It brought the man to death's door and only by vigorous measures was he saved, and the excoriation of the surrounding skin was severe and a source of great discomfort. As I have remarked, eventually he made a good recovery.

Another case was that of a prominent physician in our locality who had had very few symptoms of gallstone trouble or infection, suddenly came down with acute cholecystitis, empyemic in character, and was operated upon rather early—namely, within twenty-four hours. His condition was very serious. He was severely infected and nothing was done except a drainage, operation, removing five or six ounces of pus from the gallbladder, mixed with bile, and three stones. The common duct was palpated and no stones were found in it, but under the circumstances with him, as sick as he was, it was not opened. He had a rather stormy convalescence from the fact that he developed an acute dilatation of the stomach. He recovered from this. The drainage was good and efficient and seemed to be all right, but the drainage tract did not close up. The operation was done about the middle of last May. The drain tract is still open, and in spite of the fact that we felt no stones in the common duct at the time he is passing regularly from three to five stones a week out of his drainage tract, and where they come from is a question to me. I am in doubt as to whether the number of stones he has passed in the last four or five months could have been stored in an hepatic duct. It seems to me he must be manufacturing them as he goes along, and in that case I wonder if it will not be necessary for me to remove his gallbladder.

DR. MILES F. PORTER, Fort Wayne.—I would like to say a few words; first, in appreciation of the paper, and, next, I would like to say that after figuring up twenty-six years of experience

in gallstone work, I do not believe I have ever thought it necessary to remove the gallbladder more than half a dozen times. I never have left it when I was sorry that I did leave it, but once, and in that case the subsequent removal of the cicatricial remains of the gallbladder was an operation accompanied by no danger, no risk, and was followed by complete recovery. In fact, I think even in that case the good obtained by the safe drainage through the cure of the cholangitis and pancreatitis warranted leaving the gall-bladder for that length of time.

Concerning typhoid infections of the gallbladder, it seems to me that our knowledge up to the present time points to three very important practical facts. First, that these infections are very frequent. Second, that they may often go to a dangerous limit without a knowledge of their existence. Third, so far as reported cases go, one out of every three, over 30 per cent., of them perforate. The practical points to be derived from these facts are these: first, that every case of typhoid fever should be observed by the attending physician with a view to the possible infection of his gall tracts, and if they are infected, the infection will manifest itself to the examining fingers, although the patient, because of his stupor, says nothing about it, and his chart shows little or nothing indicative of it. In the next place, when the diagnosis of infection is made, remembering that one out of three will nearly always perforate, it seems to me that, contrary to what obtains in so-called appendiceal complications of typhoid, we should in gallbladder typhoid complications operate at once. That should be the rule.

DR. WALTER B. DORSETT, St. Louis.—I have been very much interested in the paper as well as in the discussion. I wish to say only a few words in regard to the diagnostic points brought out by Dr. Smith. After we have gone over all of these points and have probably made a positive diagnosis, now and then that diagnosis will not be confirmed by an operation, and I am impelled to make this declaration in view of the fact that in May I operated on a young woman, twenty-nine years of age, who gave a clear history, so far as we could recognize the symptomatology of gallstone disease. I did not promise her I would find stones in the gallbladder, but simply impressed the family with the fact that she had gallbladder trouble. The pain in the shoulder radiated down from the site of the gallbladder; the pain in the epigastric region was marked, and there was some history of jaundice. An incision was made over the gallbladder, and it was found to be perfectly normal. There was a mass that ran down from the liver toward the anterior superior spine, and that led me to believe that we had an empyema of the gallbladder. I enlarged the incision and introduced my hand into the abdomen and could feel this mass which seemed to be connected with the kidney. I then made an incision over the kidney, got into the peritoneal cavity, and I found a mass that involved the kidney and the liver. I was enabled to draw that portion

of the kidney out of the abdominal cavity, and on the under surface were four large nodules; they were of grayish appearance. I inserted a needle into two or three of them with the idea of getting some pus. No pus was found. I saw that to remove the cause I would have to take out the kidney and a part of the liver. I simply dropped it back, sewed it up, and made a diagnosis of sarcoma. The patient was taken to her home, she recovered from the operation, and in the latter part of June I saw the patient with extreme pain and agony in this side accompanied by chill. The tumor could still be easily outlined by palpation, and her condition was such I thought dissolution would take place in a short time. However, at my next visit she complained of some pain in the shin bones, and I noticed that this pain was not only along the long bones, but in the head and over the sternum, and I put her on mercury inunctions, which I kept up and inside of three weeks that woman came to my office to see me.

I speak of that to emphasize the fact that our symptomatology of gallstone disease is not yet complete and the last word has not been said.

In regard to the treatment, I will say that I would like to relate another case which occurred only two weeks ago. The patient gave a history of gallbladder trouble. I made a correct diagnosis in this instance. I made an incision; I found empyema of the gallbladder, and I drained according to the best methods that are now known. The patient did well for three or four days. At twelve o'clock at night the nurse called me to the hospital, and I found her in collapse and she died in five hours. Nornal saline solution was injected in the median cephalic vein, but she passed away. I wanted to make a postmortem examination, begged for the opportunity to do so, which was not consented to, and I do not know why that patient died, possibly from embolism.

DR. ROLAND E. SKEEL, Cleveland.—Last year Dr. Smith read a paper along this line at the Syracuse meeting of the association, but on the diagnosis of gallbladder disease. This year he has followed the subject up with a paper on the treatment, and I hope next year he will follow with a paper on the proper technic in operating on gallbladder cases. Last year I was obliged to comment on the intellectual caliber of Dr. Smith's patients because they gave such accurate histories, and congratulated him upon having patients of this type, while most of us have to put up with imperfect histories, so that we cannot make a positive diagnosis in some of the cases, excepting that something is wrong in the right upper quadrant of the abdomen. Personally, I am utterly unable to make a differentiation between gallbladder disease, chronic appendicitis and perigastric adhesions from an old ulcer of the stomach in a large proportion of cases. I tell these patients that I will not know precisely what the lesion is until I see it. I hope the technic will be taken up next year by Dr. Smith because, like Dr. Brown,

my experiences have been somewhat unfortunate. In fact, I am sure the mortality rate of the average operator is larger than he is willing to admit. It will be said, of course, that this mortality is due to the fact that operations on these cases are delayed until we no longer have simple gallbladder disease, but pancreatitis, cholangitis, etc., and from these the patient dies. I have had an experience or two similar to that of Dr. Dorsett in which the patient died following a gallbladder operation and in one instance I was enabled to secure a postmortem examination. In this instance the gallbladder was practically destroyed previous to operation and in releasing the adhesions it was found that the head of the pancreas had been injured. Pancreatic fluid had escaped into the lesser peritoneal cavity and this accident had caused the death. If we undertake to operate early on cases in which an expert diagnostician is willing to make a diagnosis of gallbladder disease, before the formation of calculi, my experience has been that some patients are worse off than before, a number of them have more discomfort. These patients do not apply for the relief of adhesions to the gallbladder or duodenum, but apply for relief from pain. The operator finds the adhesions and releases them, but the patient makes complaint because there is as much pain as before, and quite naturally since we have no method to keep adhesions from re-forming. This occurs in enough instances so that to me the technic of gallbladder work, especially as it relates to the prevention of adhesions forming after operation, is something I would like to know more about, and I would like to ask some man of wide experience in gallbladder surgery to tell us or demonstrate to us a method by which we may avoid the formation of adhesions in those instances in which the original lesion was not a marked one. It is perfectly easy to conceive of a patient having a large number of gallstones in the gallbladder and suffering severely therefrom, so that the formation of a few postoperative adhesions is a small affair. A patient with empyema of the gallbladder, or with a perforated gallbladder, has enough trouble and is ill enough, so that a few adhesions after operation is an insignificant affair and the patient willing to put up with that minor discomfort. I refer now to the borderline cases, those in which the patient suffers from dyspepsia, in which there are tender points over the gallbladder, in which we find a few adhesions with the gallbladder a little yellow instead of purple and containing a considerable amount of dark, tarry bile. In these, simple drainage is the only practicable thing to do, but some of them will come back again with the same discomfort because the adhesions have re-formed. In this particular class of cases I should like some light on a technic which will avoid a recurrence of the pain from adhesions and put the patient in a better condition than before operation.

DR. CHARLES L. BONIFIELD, Cincinnati.—There were two or three remarks made in discussing this subject that I wish to refer to. In the first place, the remarks of Dr. Sadlier

about the patient who was going to the bad from the excessively free drainage of bile. To my mind his explanation of that case is not entirely satisfactory. Personally, I am glad to see the bile draining freely, and in these chronic cases in which the liver is much enlarged, we frequently have enormous quantities of bile passed. I do not believe it is possible for a person to succumb to the loss of bile like they succumb to the loss of blood. His patient was in collapse, or the collapse occurred after the drainage tube came out, and I am inclined to think there was a leak in the drainage tract in which there was a little invasion of the new part of peritoneum and the shock consequent on this leakage was the cause of the collapse.

With reference to the remarks made by Dr. Skeel, that there are many of these cases that do not get absolute relief, and when these patients are not relieved he attributes it to the fact of the re-formation of the adhesions. In my opinion it is not so much due to the reformation of the adhesions as it is due to the early getting of the patient out of the hospital, being in too much of a hurry to get rid of the drainage tube, and not having let the gallbladder drain until it is entirely well, and there is a recurrence of the gallbladder disease and not a recurrence of the adhesions themselves.

DR. SKEEL.—I am free to say that I leave drainage in too long, and I keep my patients in bed a month.

DR. JOHN W. KEEFE, Providence.—The time has come when we should drop the term that this man or this woman is suffering from gallstone disease. Our patients expect us to produce the gallstone or gallstones. In the old days it was said that there was one practitioner who always went with a gallbladder stone in his pocket, so that the patient would not be disappointed. We know that in fully one-third of the cases operated on we find no gallstones, and there is just as much sense in saying that the sputum of the tuberculous patient is the disease as to say that the gallstone is the disease. I think we should speak of this as disease of the biliary tract. In the secondary operations that are done by some other surgeons, we are oftentimes criticised for having overlooked a stone or stones which they may have found. It may be that we have not overlooked the stone in the gallbladder, the cystic duct or the common duct. There may have been stones in the hepatic duct and later these came down, and the operator at the secondary operation has been able to find these stones, but he reflects on the surgeon who did the first operation, saying that he overlooked the stone or stones. It is an easy matter to overlook stones in the common duct, and I do not know of any way to guard against it. If we make an incision in the common duct and use a probe we may be able to tell. The common duct may be so large that we can introduce a finger and feel the stone. One can more readily feel a stone in the gallbladder or dilated common duct with the hand than with the probe.

I think the period of drainage is oftentimes too short. We are

in too great a hurry to have these patients leave the hospital rapidly as the surgeon has some other work to attend to. We like to send them out with the wound closed if possible, so that we only have drainage for two weeks. When we have done that we think we have done something a little better than the other man. I think drainage should be kept up for a longer period, as it is from this prolonged drainage a cure is effected. It seems that the best men in the profession are removing the gallbladder less and less. There was a time when it was thought it was a more difficult operation, and men took pleasure in doing something more difficult than their fellows and consequently many gallbladders were removed. If the patient should have secondary trouble, and should develop trouble in the bile passages again, we have no gallbladder to assist us in that drainage as we did at the first operation. I believe very few of these gallbladders should be removed. Even in a case where the wall is very much thickened, it is surprising to see in what a short time that gallbladder, after free drainage, will become much more normal in appearance.

DR. SMITH (closing the discussion).—I am glad to see that there is such a unanimity of opinion as regards the advantages of drainage as contrasted with cholecystectomy, and yet only a few weeks ago a rather prominent surgeon in this country published an article in one of our leading medical journals in which he advocated cholecystectomy in a large proportion of gallbladder infections, and the greater part of his argument related to the fact that cholecystectomy was safe. Because the operation is safe is no argument in favor of performing it, unless it can do something better for the patient than some other operation. The mere safety of an operation is no argument in its favor. There are some surgeons in this country who are removing gallstones from the gallbladder, sewing up the gallbladder, and dropping it back. There are a great many surgeons abroad doing that operation. That is wrong, because it is really an infection in the gallbladder, and not the stones, that we are operating for. The gallstones are simply an incident in the course of cholecystitis. I believe Dr. Bonifield and Dr. Keefe are right in stating that the trouble remaining after an operation upon the gallbladder seemingly is not due to adhesions, but to continuation of the infection. Dr. Skeel has said that he drains his patients three or four weeks and keeps them a long while. I am glad he does, and I feel we should. We should keep these patients until we are morally sure that the infection has been cured. That is what we have operated for.

I do not see any advantage in a cholecystectomy over a cholecystostomy, so far as subsequent adhesions are concerned. What causes the adhesions? First, manipulation; second, leakage of infected bile into the peritoneal cavity. In operating on all of these cases we must bear in mind that the bile is infected, and we do not want it to leak into the peritoneal cavity as we thereby

set up infection in an area we have made raw, and I believe in doing a cholecystectomy there is more manipulation of the parts, there is greater danger of infection of the peritoneal cavity from the leakage of bile, because the cystic duct is cut off away low down, where you cannot get at it so readily in order to prevent the escape of bile into the peritoneal cavity. I think Robson's method of raising the abdomen, rotating the liver, turning the gallbladder out and draining it, or turning it out for an operation, is responsible in many instances for the after-troubles following an operation. What is the sense in rotating the liver and pulling one-third of it outside of the abdominal cavity to get at the fundus of the gallbladder, when you are simply going to incise and drain, explore with your finger, and put in a drainage tube and drop back? If you have reason to believe you have stones far along in the common duct or hepatic duct, and wish to explore these, then Mayo-Robson's method is the thing. But gentle manipulation must be the rule all the time, and the prevention of bile leakage. The prevention of bile leakage in my hands is overcome in this way: I operate with a rubber dam; I fix the gallbladder like a dentist would fix your tooth when you are to have a cavity filled, simply make a nick in the center of the rubber dam, which is slipped over the gallbladder, whether the gallbladder is in the abdominal cavity or resting outside on the abdominal wall. The rubber dam binds closely around the gallbladder, and if your are careful in your manipulation there is no reason for stuffing a large wad of cotton or gauze in the kidney pouch; there is no reason for stuffing another big gauze pad around the duodenum and pylorus. There is no reason for stuffing a third one down here and some little ones on top of them, five or six gauze pads packed in the abdominal cavity, if you are going to incise and drain the gallbladder. The packing of these sponges is a damage to the peritoneum. With this rubber dam carried down in there, the assistant has to watch it a little to see it does not slip off; when you incise the gallbladder and the gallbladder collapses, you get to the gallbladder that looks extraperitoneal. You do not get a drop of bile into the peritoneal cavity, and in this way you avoid after troubles which come.

Just a few words with reference to typhoid infection. I think Dr. Pantzer has said more truthfully than I did that in typhoid fever an operation does benefit the patient; that is, the patient is benefited within the first six, twelve or twenty-four hours. Invariably there is improvement in the condition of the patient almost immediately following the operation. You do not get profound shock, and you have no reason to regret you have performed an operation even in these badly infected cases of typhoid fever.

REMARKS ON THE OBESE ABDOMINAL WALL.

BY
FRANCIS REDER, M. D.,
St. Louis, Mo.

(With five illustrations.)

THERE is no question that a large accumulation of fat upon the abdominal wall, such as is often found in women, is a distinct handicap to the surgeon in his work. It is a fact that the intraabdominal lesion necessitating surgical intervention is usually of such a nature as to proportionately increase the difficulties for the operator—namely, a small fibroid in an atrophic uterus, a retrocecal appendix, a small gallbladder tucked away in a deep fossa with a stone in the cystic duct or still worse a stone in the common duct, and the like. These are some of the conditions I have encountered and my work has not only been difficult but unpleasant. To obviate to some extent this embarrassment caused by excessive fat I have followed during abdominal operations the suggestion of Dr. Howard A. Kelly who advises excision of enough of the obese wall to facilitate intraabdominal work. I can say from the limited experience gleaned from operations upon five patients where masses of fat were removed that the intraabdominal work was made less difficult, but I can also say that in two of the cases this fat excision caused no end of trouble, induced by a late infection.

It does not require any particular skill to cut away enough of the fat about the field of operation to get a sufficient amount of room for easier work; it does require some knowledge, however, to ablate these masses of fat that no untoward consequences may arise.

In the first place, good judgment as to how much of the fat should be removed is very necessary, as the subsequent approximation of the flaps is of great importance. Patterning by "slicing" is a very bad practice. The initial incision should fulfill all requirements. A long and sweeping stroke with a large scalpel or a small amputating knife insures the best incision. Small hacking cuts are not to be recommended. The smoother the fat surface the better the approximation.

In the second place, how should the mass of fat be excised?

This is of much importance and had I paid more attention to the manner of excision I am quite certain that no subsequent trouble would have arisen in the two cases I have mentioned. The fault here lay in too much dissection of the fat from the fascial layer. Excising the mass of fat and then dissecting (undermining) the adjacent portion sufficiently free from the fascial layer to permit of "sliding," that the proper approximation can be obtained, is wrought with dire consequences. Fat is a tissue of low vitality, and an accumulation of a serosanguinous fluid between the fat and fascia may prevent a timely union. It may eventually lead to a fistulous condition or it may become infected. These infections are usually our "late infections." Either condition would prove very annoying and require weeks in healing.

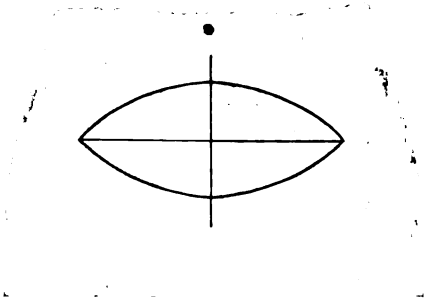


FIG. 1.—Outline for removal of mass of fat.

To prevent any postoperative sequelæ, the mass of fat should be removed wedge shaped, the two incisions converging into one upon the fascial layer. This would leave no undermined surface as a receptacle for secretions. It does not matter how long the incision is carried provided there is no extensive undermining of the fat layer.

For instance, in an abdominal section when it has been decided to remove a portion of the fat, it is advisable to remove the amount desired through a transverse section first, and then proceed with the vertical incision through the rest of the abdominal wall. This is done to insure a satisfactory approximation of the skin. It will be seen that the removal of the wedge will only give the additional room at the skin surface, which decreases as the incisions converge toward the fascial layer.

To be as accurate as is possible in excising a wedge of fat, I have found it of service to first carry a straight incision across the abdomen down to the fascia. This incision discloses the thickness of the fat. By placing the left hand into the incision and against the fat wall I am able to guide more accurately the right hand in making the upper and lower flaps. After the abla-

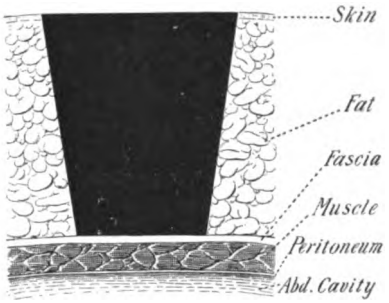


FIG. 2.—Illustrates faulty method in removing fat wedge.

tion of the fat has been accomplished the wound is covered with hot saline cloths while the intraabdominal work is being conducted.

On account of the extensive trauma it is imperative that all bleeding should be checked and that the wound be as dry as possible. Considerable oozing is to be expected. This sero-

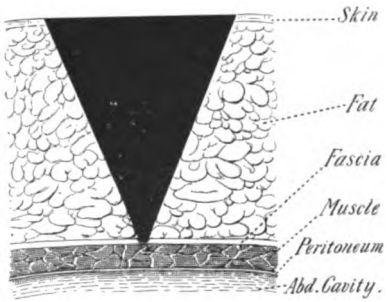


FIG. 3.—Correct method of removing fat wedge.

sanguinous fluid must not be permitted to accumulate. It should be drained thoroughly. The most serviceable drain I have found to be a piece of rubber dam one-fourth to one-half inch in width, secured with one or more silkworm-gut sutures at the bottom of the wound, throughout its whole length. To facilitate the removal of this drain, which is usually done forty-eight hours

after its introduction, it is divided in half before it is placed in the wound. At each end of the incision about two inches of the drain is allowed to protrude.

The suturing of such an extensive wound is a factor of some import. When the fat surfaces have been cut smoothly and the apposition is good, the two surfaces will adhere, and remain agglutinated without further suturing of the fat. Should, however, a faulty technic create surfaces of an uneven nature,

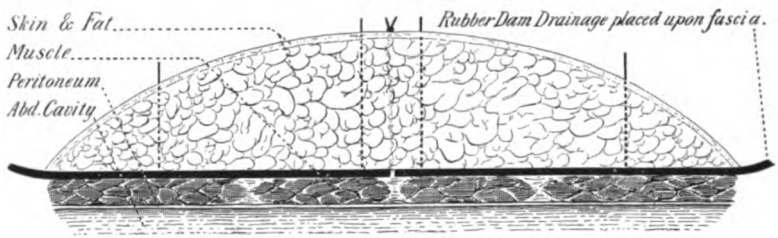


FIG. 4.—Closure of wound after removal of fat wedge.

then it would be advisable to sew the fat together with fine catgut. To relieve tension and further facilitate the maintenance of a good appositon, deeply placed silkworm-gut sutures introduced two inches apart and not too tightly drawn will be of service.

The skin is sutured with linen thread and the stitch employed is the simple continuous recurrent—namely, an approximation suture is placed by piercing the skin, using a straight and long

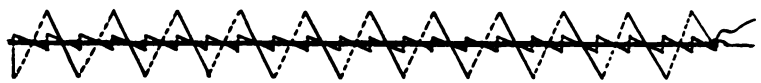


FIG. 5.—Simple continuous recurrent suture.

Hagedorn needle, one-half inch from the wound margin at distances of an inch. The recurrent stitch simply picks up the edges of the skin between each approximation suture and prevents any inversion of the margins.

A moist dressing is applied (without rubber tissue) over the suture line and at either end of the incision harboring the drain. The object of a moist dressing is to facilitate good drainage. The application of a dry dressing would defeat this purpose by having the collected wound secretion dry immediately upon ex-

posure, thus sealing the wound and preventing further escape of any secretion. The skin sutures are removed on the fifth and the silkworm-gut sutures on the tenth day.

In venturing an opinion on this subject of fat removal I may state that it is only to be recommended when the mass of fat is a distinct obstacle to the intraabdominal work. The measure in itself may appear easy, but in reality I have found it a rather difficult procedure.

DISCUSSION.

DR. JOHN E. CANNADAY, Charleston.—Since my friend Dr. Bonifield several years ago told me he had been in the habit of suturing fat with impunity by using fine catgut, I have been doing the same thing, and have done several so-called lipectomies for making intraabdominal work more accessible, and, at the same time, improving the patient's appearance by making him or her more comfortable, giving her a sort of straight front, and I have usually obtained primary union, although once or twice I have had failure from breaking down of the wound. Dr. Howard Kelly in describing his operation of lipectomy says that by searching you can usually find some subdivisions of the fascia which run between the lobules of fat, and if you can catch these up and bring the wound together without suturing the fat, so much the better.

DR. EMERY MARVEL, Atlantic City.—One swallow does not make a summer, nor is one experience conclusive in considering cases of the kind under discussion. However, I wish to emphasize the point that there is no question in my mind but that where an excessively fat abdomen exists, the removal of a wedge-shaped piece of fat will facilitate the work of the operator. Especially is this true if it should be a hysterectomy that calls for his operative skill. I think Dr. Reder will agree with me when I say that coincident with every woman possessing a large zone of fat, that there is a relatively diminished amount of thickness in the muscle wall. My experience is limited to one case, and in operating on this case I was influenced by Dr. Kelly's paper. In this woman the layer of fat was four and a half inches thick. She was highly neurotic, and consequently not a very inviting subject on which to operate. The fibroid tumor was not very large. In fact, the uterine body itself was but slightly enlarged. A diagnosis of uterine fibroma was made. After a curetment by one of our eminent men of Philadelphia had failed to check the metrorrhagia, I advised hysterectomy. I did the operation of resection of the fat which Dr. Reder illustrated, leaving a space between the lower section and upper section, and sliding the upper section toward the lower section. In that case the method was most satisfactory in facilitating the operation; and

satisfactory to the patient in the reduction of her abdominal-wall excess. In that case I did not fear so much infection as I did fat necrosis. To provide for the possibility of fat necrosis, I think in every case, instead of putting drainage transversely, we should make a puncture wound in the median line below and use rubber dam slips for drainage, which I did in this case. While a slight fat necrosis occurred in this case, it did not interfere with primary union. The result was all that could be desired, and I would urge you to utilize such a method in facilitating the operation under like conditions. I do not think I would be tempted to do the operation simply for obtaining a good cosemtic result.

DR. CHARLES L. BONIFILED, Cincinnati.—We all recognize the fact that fat tissue is exceedingly low in vitality. Like Dr. Cannaday, I never hesitate to suture fat. In doing so, I have always used a very fine catgut and have not drawn it excessively tight. To my mind this prevents the accumulation of fluid between the layers; you can close the fascia and skin and leave the fat unsutured, where there is a thick layer of fat. The fat, although brought together, leaves a potential cavity in which there is an accumulation of fluid, and this fluid predisposes to an infection. Recognizing the low vitality of fat, it is always a rule of mine never to place a hemostatic forceps on it if I can avoid doing so. In waiting for a bloodvessel to stop bleeding, the best way to control it is by moist hot gauze sponges. By the excessive use of hemostatic forceps on fat you can do more damage than with careful stitching. The point Dr. Reder made in not loosening the fat is of great importance. I had some difficulty in a case of my own from that, and I should never do it again because its blood supply is too limited anyway, and if we interfere with is by undercutting it we are almost sure to have fat necrosis.

DR. THOMAS B. NOBLE, Indianapolis.—If possible, in obese individuals, to get around the buried absorbable suture which has a constricting and devitalizing influence always, and is therefore a menace, I have been using transfixion sutures of silver wire with buttons protected by gauze at either end. In cases of ventral herniæ, where the fat cleft is three or four inches thick, and the respiratory movements of the abdomen are sufficient to keep these flabby walls in motion disturbed, unsplinted, and thereby favoring exudation between the two surfaces of fat, I have been able at once by these fixation sutures of silver wire, which are introduced widely on either side of the incision, to fix at once the wound itself as by a splint, immobilizing it and insuring it against any dead space that may not be taken care of by atmospheric pressure, and I have had no infection attending this method. Silver wire, as you know, is really inimical to infection, has germicidal properties, and can be used very extensively, and I have yet to regret having introduced it in cases of this character.

DR. REDER (closing the discussion).—As to the technic of excising fat, it depends upon the manner in which the fat is ablated. If you do not undermine the fat layer too much, so that no spores which invite the accumulation of serum and blood are created, you can feel reasonably sure that you are going to have union by primary intention.

A CONSIDERATION OF THE FACTORS ENTERING INTO THE MORTALITY OF ACUTE INTESTINAL (MECHANICAL) OBSTRUCTION.

BY

JOHN YOUNG BROWN, M. D.,

St. Louis, Mo.

If it were possible to ascertain the exact number of deaths resulting each year from the sequences of acute intestinal block, the total would be astonishingly high. With such statistics as we are able to obtain from sources reliable, the mortality is shown to be in the neighborhood of 50 per cent. Why is it that the mortality from almost every other intraabdominal condition has been steadily decreased while that of acute mechanical obstruction has remained almost as high as it was before the advent of modern surgical methods.

In the judgment of the writer, it is due to the fact that the surgeon has failed to convince the general practitioner of the vital importance of recognizing such conditions early and giving to them the benefits of immediate surgical relief.

In a recent paper[2] read by the writer before the Southern Surgical and Gynecological Society, he reported a study of the records of fifty-nine cases of acute intestinal block, coming under his care during the last four years. This study was undertaken with the idea of ascertaining the character of treatment given to each case before it was sent to operation, and the bearing such treatment had on the mortality. The facts elicited from the study of these cases were interesting in that they showed an utter failure on the part of the general practitioner to appreciate the mechanics of this condition and that the methods applied for its relief were harmful rather than helpful. That the general practitioner who but occasionally sees such cases, is at sea when it comes to instituting methods for their relief, is not to be wondered at, when we consider the teachings he receives from modern text-books on general surgery dealing with this subject. Take, for instance, that commonest of all types of intestinal block,

[1] Transactions of the Southern Surgical Society, 1910.

strangulated hernia. A recent text-book, the pages of which are hardly dry from the press, written by one of the most brilliant, conscientious, and successful operators in this country—a man who has done much to perfect modern surgical methods—in discussing the treatment of strangulated hernia under the head of taxis, says:

"Place the patient on a couch or a board, or if this cannot be obtained, take a door out of its frame and place the patient on it; then elevate the lower end of this so that it will be at an angle of about forty degrees with the floor. Have him draw up his knees, and then manipulate the protruding portion gently, so as not to cause any injury to the intestine, remembering that the longer the strangulation has existed the more gentle must be the manipulation. It is well to permit the patient to manipulate the hernia himself while he is in this position, because he is frequently more experienced, and consequently may be more successful than the physician. If reduction is accomplished, it is well; if not, it is best to explain to the patient that by relaxing the muscles by the use of an anesthetic you may still be successful, but if this fails, it will become necessary to sever the circular band which prevents the reduction of the hernia." That such advice from so eminent an authority is bound to do harm, cannot be gainsaid. He advocates a procedure to be practised by others which could only prove disastrous in his own skilled hands.

Only recently I listened to a paper on the treatment of intussusception in children. The method advocated was the so-called succussion method which hung the infant by its heels and endeavored to shake out the intussuscepted bowel. This, of course, was to be aided by inflating the rectum in the event the first procedure failed. Most of those present acquiesced in the treatment and hailed it as a new means of relieving this most murderous condition.

Should a plumber be called to treat an obstruction in the pipes of the bathroom or the kitchen, similar in character to the conditions commonly found in cases of this type, and apply the methods of treatment usually applied in the nonoperable management of such cases, it is more than probable that the head of the household would order his arrest and request that he be sent to the psycopathic ward of some nearby institution in order that his mental condition might be looked into.

"An examination into the conditions found at an operation or at an autopsy shows that in all cases two factors are at work

determining the fatal issue. Of course, the first and least important is the mechanical block in the bowel, the actual obstruction. The second, and incomparably the more severe, is the septic absorption from the distended, congested, and perhaps ulcerated bowel above the place of stoppage. It will be clear, therefore, that in operating upon patients so afflicted, the relief of the mechanical obstruction is but a part, and that the smaller and less significant part, of what the surgeon needs do.[1]

In considering the factors entering in the high mortality of acute intestinal obstruction, we must place at the head of the list, late operation. Second, the treatment received before operation. Third, the technic and time of the operation itself. Fourth, the after-treatment.

If we could impress upon those who first see such cases that delay means disaster, and that a low mortality can only be gotten by an early operation, much could be accomplished. However, this is not always possible. Not infrequently, though the condition is recognized by the attending physician, the family will refuse consent to an immediate operation or it may not be possible to get at once a surgeon competent to do this work. This being the case, it becomes the duty of those of us who teach to call attention to the harmful nonoperable measures which are commonly employed, with the mistaken idea that they are beneficial. Foremost among such remedies, we may mention cathartics. The symptoms in any case argue eloquently against their use. Nature invariably warns by the retrograde peristalsis, and the persistent vomiting, that she is making an effort to relieve the distended bowel above the block. Cathartics are as harmful in such cases as diuretics would be in a retention of urine, due to an impermeable urethral stricture. Yet, we rarely see a case come to operation that has not been given cathartics varying in strength from calomel to croton oil. If gastric lavage was used in the same routine manner, the profound toxemias found in the cases of three and four days' duration would be far more infrequent. Morphine is another drug, the use of which can not be too strongly condemned. Regarding operations undertaken for the relief of such conditions, we must carefully guard against certain errors of omission and commission which add to their danger. As all such operations have for their purpose the relief of the block and, second, the removal from the bowel of as much as possible of its highly toxic and septic contents, all

[1] Monyhan's "Abdominal Surgery."

such operations should be preceded by a careful washing of the stomach. Much toxic material can be removed in this manner and the danger of fecal drowning during the administration of the anesthetic is greatly lessened.

The administration of the anesthetic should always be entrusted to a careful anesthetist. The operation should be executed as rapidly as possible. When the abdomen is opened, if the bowels are greatly distended, it is far safer to puncture in several places, liberating the gases and draining the bowel. Such small punctures can be rapidly closed with purse-string sutures. It is a bad practice to forcibly handle distended bowel. In cases where resection is necessary, it is of prime importance to carefully drain the bowel above the block. The after-treatment of such cases should consist of frequent stomach washing, avoidance of opiates, and the use of salt solution both in the rectum and under the skin.

DISCUSSION.

DR. J. GARLAND SHERRILL, Louisville.—This is certainly an interesting subject and one which needs emphasis. Like Dr. Brown, we all see these cases that are sent to us in a moribund condition, and we increase our own death rate and prevent other patients from coming to operation by attempting to cure them after their cases are hopeless. Sometimes they will come in four or five days after the onset of the obstruction. Occasionally we save some of them, but the main factor has been delay in bringing them to the hospital. One great cause of death in these cases is toxemia within the intestinal canal. Take the obstructed bowel, with a culture of bacterial flora growing actively inside the canal; at the point of this obstruction the bowel wall is so damaged that you have invasion of the peritoneal cavity. I believe the profession at large should be urged not to give purgatives to these patients, but depend upon gastric lavage and drainage of the colon until they can bring the patients to a surgeon. Prompt operation is imperatively necessary, and it is not very dangerous if done promptly. If a prompt operation is done, these patients can be saved in the majority of instances.

The technic of the operation is so well understood that it is unnecessary for me to go into details in that regard. I wish to utter a protest against the use of opium in cases of this kind where a diagnosis has not been made.

DR. MILES F. PORTER, Fort Wayne.—It seems to me, if we get down to brass tacks in this affair, we should reach the conclusion that the patient either has a strangulated hernia, or an intestinal obstruction, or a toxemia, or a combination of the two

things. Taxis may have been delayed and if you do not delay but open the patient's gut until you can handle it through an open wound, you will not have any toxemia. That, it seems to me, is the milk in the cocoanut. Above all things, if you suspect an obstructed bowel, do not give a cathartic, but the usual thing is to give one to see whether the bowel is obstructed or not.

DR. WALTER C. G. KIRCHNER, St. Louis.—Those who are accustomed to doing emergency surgery will have a great many of these cases to deal with, and most surgeons see the end-results of these cases of intestinal obstruction. We speak of getting these cases early and are inclined to censure the general practitioner for not sending them earlier, yet we do not tell him some of the cardinal symptoms that go with these conditions. In the end-results we all know what has taken place. In my own experience I have found that pain accompanied by the peristaltic or obstruction wave is one of the cardinal points in the early diagnosis of this condition, and I have found it very useful in postoperative cases where we suspect trouble and in other conditions. More than once, when this cardinal symptom was present, with normal pulse, with a normal temperature, and with only the painful peristaltic wave, which frequently can be seen through the abdominal wall, and often with a history of constipation or after operation, with this one symptom, I have in several instances relieved the obstruction with a prompt operative recovery. I therefore believe that this is a very important observation in regard to the early diagnosis.

DR. WILLIAM H. WATHEN, Louisville (by invitation).—I know that all of the Fellows are much interested in the excellent paper Dr. Brown has read upon such an important subject. It is important because of the high rate of mortality caused from delay. It is important because, if there is not delay in operating on a case of acute intestinal obstruction, by a good surgeon, practically all of these patients can be saved. It has been my experience that the primary treatment in cases of acute obstruction, as well as in cases of appendicitis, before the surgeon was called, was practically homicidal. I want to put myself emphatically on record that aperients or purgatives have no place in acute appendicitis, or in any form of total obstruction of the bowel. Unfortunately, every loving mother or nurse will, without sending for a doctor, give an aperient or purgative to a child taken suddenly ill with a severe pain in the epigastric region. This is the first symptom of appendicitis, followed by final localization of the pain in the right iliac region; at about the same time, by nausea, then vomiting, elevation of temperature, acceleration of the pulse, and abdominal rigidity. These are the symptoms that every physician should know point to appendicitis. First, and always, pain, nearly always in the epigastric region, and when this is the case not cathertic or any aperient should be given until the case has progressed so that you can determine whether it is or is not appendicitis. What

will an aperient do for appendicitis? In cases where typhlotomy has been performed, even if we put water in the stomach, after a little time we find increased peristaltic movement in the cecum, the lower ileum, and in the appendix. By giving a purgative we increase rapidly the number and virulence of the bacteria in this region of the intestine; and just here is where the bacteria are most abundant and most virulent. A knowledge of the physiology and pathology of the gastrointestinal tract, and experience in treating appendicitis, and acute obstruction, teach us that the administration of an aperient in such cases as we have under discussion is never justified, and the sooner we teach the medical profession the necessity of diagnosing these cases of appendicitis, and intestinal obstruction promptly, and impressing upon them the importance of not giving aperients or purgatives, the sooner will we be able to do something to prevent practically the homicidal treatment in many of these cases. So I think, first, we ought to teach diagnosis; second, prompt surgical treatment, and not devote too much time in teaching medical students how to operate—that can be learned later by hospital experience, but the correct methods of promptly diagnosing acute appendicitis, acute intestinal obstruction, or any other acute abdominal catastrophe, in time for prompt surgical treatment, can be taught in medical schools before the student gets his degree. They should also be taught not to give aperients, food or liquids in these acute and sudden abdominal diseases, and then we would have in these cases fewer "therapeutic deaths."

DR. ROBERT T. MORRIS, New York.—I would like to ask the name of the practitioner who first proposed alum injections after operation where we have atonic ileus. It has been a life-saving resource in some cases I have seen.

DR. WALTER B. DORSETT, St. Louis.—Dr. Virgil O. Hardon, of Atlanta, is the man who first proposed alum injections.

DR. MORRIS.—It has not been brought up here, and I presume most of the members are familiar with the fact that an ounce of alum in a pint of water has the same effect in the bowel that a little alum has in the mouth. In the mouth it produces a free outflow of saliva. In the bowel it takes the toxins with it, and stimulates the bowel, and that together with massage has been a life saving resource after operation.

DR. DORSETT.—Two or three weeks before our meeting at Cleveland, I came home on the train from Cleveland with Dr. Eastman, of Indianapolis. A case of paresis of the bowel after operation was mentioned, and he told me he had received a reprint from Dr. Hardon, that he had tried alum injections in two cases with satisfactory results, and when I got home I received or found one of these reprints on my desk. In two hours thereafter I was called to see a case of obstruction of the lower bowel, and in that case I used it, and I have used it very frequently since.

DR. REDER.—What are the exact proportions?

DR. DORSETT.—One ounce to the quart. One ounce to the pint may cause sloughing of mucosa.

DR. EDWIN WALKER, Evansville.—I have enjoyed Dr. Brown's paper very much. I fully agree with the teaching he has given in his previous articles. I want to speak of two points. In the first place, in regard to the use of cathartics. If it is irrational to give a cathartic where there is obstruction of the bowel, or if it is also irrational to give it in acute appendicitis, why is it any more rational to give it in the other diseases where we do not know what the trouble is? It is irrational to give cathatics habitually, and one cannot defend it by saying that it is the general practice. We should put more emphasis on the fact that the cathartics should not be given in these severe cases of intestinal obstruction, nor in any other acute disease of the intestine, until the diagnosis is made. The other point is not to do too much at the operation for obstruction. In two moribund cases I did not try to relieve the obstruction at first, but put in a Paul tube and drained the gut until the patients had recovered sufficiently to do an operation. Such practice is applicable also to chronic obstruction with fecal accumulation above the obstruction. For instance, if you have a stricture or tumor of any kind, to attempt to overcome that at one operation is nearly always fatal, but if you drain the intestine and do a radical operation later you save the patient.

DR. GEORGE R. WHITE, Savannah, Georgia.—I would like to mention the experiments that have been carried out by Dr. Bassett, of Savannah, which have a bearing on this subject. Dr. Bassett took some hungry dogs, tied a ligature around the intestine, gave them nothing to eat, put them away, and they lived nine days until they were actually starved to death. He took some other dogs, tied a string around the intestine, gave them something to eat, and they died promptly. Just as soon as the material got down below, it would go right through and set up a peritonitis.

DR. WALTER C. G. KIRCHNER, St. Louis.—In regard to the statement Dr. Morris made respecting the use of alum injections, I will say that at the City Hospital in St. Louis we have used these injections for a number of years with gratifying results, but some other surgeons in using the alum injections have used a solution which was too strong, and consequently have had bad results, such as sloughing of the mucous membrane, so that I think, as a matter of caution, while the enema of alum is most excellent, it should not be used too strong. I use an ounce to a quart, but the amount may depend very largely upon the individual case. Each case has to be studied.

DR. BROWN (closing the discussion).—My experience with the diagnosis in these cases is that, as a rule, it is exceedingly easy. Particularly does this apply to strangulated hernia. There is no difficulty in making a diagnosis, but when the diagnosis is

made an operation should be done immediately. The mortality in uncomplicated hernia from the radical operation is *nil* with almost 100 per cent. recoveries and few recurrences, the repair of simple hernia mandatory.

As to the method of handling these cases in which there is obstruction of the gut and profound toxemia, the method must be suited to the individual case. Whenever it is possible to maintain the integrity of the intestinal tract, this should be done. I have reduced my mortality materially by the use of the Monks' tube, which is nothing more than a plain tube, by making a slit in the bowel, slipping the tube in, and tying it to hold it there, and it is astonishing how much bowel you can skin over the tube and what an immense amount of toxic material you can remove from the intestinal tract. By doing this, you do away with that terrific shock that is always associated with efforts to push back the distended coils of bowel. By the use of the stomach tube before and after operation, it seems to me you come as near as possible meeting the indications for treatment in these conditions. We must always remember that where resections are undertaken, and resection should be frequently done, if the integrity of the bowel is at all questionable, it is important to remove a wide segment of bowel, getting well back into healthy tissue.

NOTES ON THE USE OF STERILIZED ANIMAL MEMBRANES IN SURGERY.

BY

ROBERT T. MORRIS, M. D..

New York City.

FOR some years I have been experimenting with the absorbable animal membranes in surgery, and now and then have found some point which seems to be new in this work. One case worthy of report was that in which a young man in riding down a steep hill on his bicycle met an automobile coming up, turned aside suddenly, ran into a bank, and the handle-bar of his bicycle tore five holes in the ileum. In that case there was so much contusion of bowel and mesentery that I did not know where to exsect. I washed out the blood and fecal matter and decided to cover each opening temporarily with Cargile membrane in a sort of mechanical way until we might get past the period of shock, and then consider the possibility of excising the bowel if the young man lived. The loops of perforated bowel were thrown about a small central drain, a large compress applied, and the young man not only lived, but I did not do any excision of bowel, and he was walking in thirty days without any fistula. That was due to the use of the Cargile membrane, and to nothing else, I presume. I had not anticipated any such result in the case. It was a temporary procedure with a dying boy.

Another point I have noticed with the Cargile membrane is that sometimes it does not undergo absorption rapidly. In an automobile accident, where a patient sustained a depressed fracture of the skull, I elevated the skull, separated the adhesions, and placed a large segment of Cargile membrane between the dura and the cranium. There was occasion to do an operation some eight months subsequently for some remaining adhesions, and this membrane, although having been eight months in place, had not undergone any change whatsoever so far as I could observe. It remained perfectly free and loose. It had prevented the formation of adhesions over the area I dressed, but there were some supplemental adhesions about the periphery.

This was an odd thing. I do not know how to account for it, and it is something which calls for an explanation.

In many cases now I have used the membrane for prevention of recurrence of peritoneal adhesions as perhaps a favorite resource. Just after my original paper on this subject was published, some experiments were conducted on dogs at the Johns Hopkins Hospital and reported, with the statement that cargile membrane not only did not prevent the recurrence of adhesions, but had a tendency to increase adhesions. These experiments were not in line with my experience with rabbits or with men and women, and later experience has shown that to be true. I then experimented with some dogs. It does not act so well with them as it does with rabbits, nor as well as it does in the human being, where it is not so likely to cause disturbance as it does in some other animals. In most of the cases now in which I have occasion to separate extensive peritoneal adhesions, I depend upon placing a sheet of this sterilized animal membrane over the area from which the adhesions have been separated for the purpose of presenting a mechanical obstacle to the recurrence of adhesions. This animal membrane acts as a conductor of endothelium. That is its function, first, mechanically keeping the adhesive surfaces apart, and secondly, acting as a conductor of endothelium. It conducts it very rapidly, and the surfaces from which adhesions have been separated will often be glistening in a very few days with new endothelium by the time the membrane is absorbed. I have had occation to work this out in a practical way in patients who have had more than one operation for the separation of adhesions. In some cases, after a general septic peritonitis, where adhesions have been nearly general, and I have not dared to separate more than a few feet of bowel at a time, I have had to do subsequent operations. In one case of perforative diverticulitis I operated seven times, the patient returning of his own accord each time because of the relief gained up to the time of operating. For the most part, one operation prevents the recurrence of troublesome adhesions. In some cases I have operated twice; in several cases three times, and in one case seven times, and in all cases the patients returning of their own accord because of a feeling of relief obtained. That is the important point. The fact that these patients return voluntarily for further separation of adhesions is an indication of the effect of the Cargile membrane, and I have found for years an extensive reproduction of glistening new endothelium. We

have a right to expect this from our knowledge of what happens to catgut ligatures which remain for a long time in the peritoneal cavity. We know that the endothelium will crawl across them and you sometimes have a suspension bridge of endothelial cells thrown out upon the catgut which remains for more than a week in the peritoneal cavity. The membrane acts very remarkably also as a conductor of epithelium. In my cases of burns I depend upon it. When a patient comes in with a severe burn, or a burn that is not severe, beyond the first degree, he or she, as the case may be, is immediately placed partly or entirely in a bath of some antiseptic, not a germicide, and the area is shaved and scrubbed, so that the blebs and injured skin are separated, the patient being anesthetized for that purpose. The treatment of a major burn means the treatment of a major surgical condition. As I have said, the area is cleansed of all decomposable material, washed with salt solution or with some other antiseptic, not a germicide, then dried, and sheets of Cargile membrane are placed over the entire area, a permanent dressing is put on, and left just as long as we can leave it. In one case a young lady in dressing for a ball made some final move with a curling iron and was burned over three-quarters of the body. When I had enveloped her in these sheets of Cargile membrane, after removing the decomposable material from the surface, I covered her with a thick dressing of gauze. She recovered with no scars of consequence. In these cases it is important to know that we remove the toxalbumin, which apparently is the dangerous factor in burns. Heat transforms various albumins into toxalbumin, which is chemically allied to rattlesnake poison. This toxalbumin caused by the heat is absorbed and produces various changes, sometimes hemolysis, sometimes acute ulcer of the pylorus, sometimes desquamation of the epithelium of the kidney. There are a number of toxic influences from this toxalbumin. In a case of the sort quoted, where such a large portion of the patient's body was burned, we had no toxalbumin influence because I had removed the superficial toxalbumins with an antiseptic solution, boric acid, and then covered the patient with the Cargile membrane. Of course, this was an extreme case.

I have treated many burns of lesser degree in this way, and know of nothing which acts better as an epithelial conductor than the sterilized animal membrane.

Some of the points I have suggested are rather new and have been developed since my earlier reports on this material

DISCUSSION.

DR. FRANCIS REDER, St. Louis.—Will Dr. Morris please tell us what this Cargile membrane is, and what the method of sterilization is?

DR. H. S. CROSSEN.—I would like to ask about the use of sterilized oil.

DR. MORRIS (closing).—Answering Dr. Reder's question first, I will say that Cargile membrane consists of little more than peritoneum of the ox. It is separated from the macerated bowel and contains some of the muscularis which remains, but it is little more than peritoneum, fat and connective tissue. This is freed from its oil by immersion in alkaline solutions, then dried, and placed in a sealed receptacle which is subjected to a very high temperature just short of roasting, a temperature under several pressures of atmosphere, and then the envelope in which it is sealed at first is not opened but covered with one or two envelopes in addition, and it is put on the market in that way.

The first one in this country to suggest the use of animal membrane in this way was Fritz Baum, of St. Louis. Dr. Fritz Baum has never been given any credit for his work in this way. He used plaques of folded catgut. He used also fresh peritoneum and was the first to suggest the method. It should be called really the Baum method; but he very modestly failed to put on record a detailed description of his experiments, and I merely found them in a small hidden note in some society transactions while studying the subject. Dr. C. O. Cargile, of Arkansas, conceived the idea of having peritoneum sterilized for the purpose, and persuaded Johnson and Johnson, of New York, to develop a method for sterilization of this membrane, which took the name of Dr. Cargile on that account, because he had been instrumental in persuading a firm of manufacturers to present the material in sterile form.

As to the question of using an antiseptic instead of a germicide, it is a very important one, which I hope will be discussed by the members of the association at length. The beef trust taught us surgeons a lession. We knew that many of our actual germicides not only injured bacteria but injured cells in such a way that repair was often delayed. We have later come to know that we do not need actual destruction of bacteria, but what we need to have is an inhibition of the development of bacteria and the body cells and control the field, and it is this control of the injured cells that we get better under an antiseptic which is not a germicide, than we do with a germicide which may destroy these cells which are to protect the patient or to carry on repair.

The beef people showed us that a very minute quantity of benzoate of soda or of boracic acid or borax would inhibit the development of bacteria in their beef, and to such an extent that we must take our cue from the beef people in much of our new surgery to-day.

I have experimented with a number of antiseptics recently, in cases of burns particularly, and I find that benzoate of soda, boric acid, and one of the proprietary preparations, namely, oxysulpho-chinolin, the trade name of which is chinosol, are very useful. I have experimented with a number of these antiseptics which are not germicides, and find that we have much better results with them than if we used germicides in most of our cases.

In regard to the use of oil for preventing the recurrence of peritoneal adhesions, I sat at the feet of Martin in Berlin twenty-five or thirty years ago, and saw him apply oil to all of his peritoneums in which there was likely to be a recurrence of adhesions, and whenever I asked him if he knew that it prevented the recurrence of adhesions, he would shake his head as an indication of doubt. However, hundreds of men who watched Martin use oil followed his method, and whether it was valuable or not I do not think we know definitely. Later other men suggested the use of other oils. Martin used sterilized sweet oil; others have suggested that the mineral oils would be absorbed just as readily as the vegetable oils. Sterile vaseline is a mineral oil, not readily absorbed, can be used and has been used in place of the vegetable oil first proposed by Martin. Now, however, we have a new proposition to use lanolin, and recent reports have been made of cases in which lanolin has been smeared thickly over the area from which adhesions have been separated, and it would seem to act in a mechanical way in preventing the recurrence of adhesions in which new endothelium would form. Just how effective this is I do not know, but I simply make the note in answer to the question.

A MEMBER.—Do you employ any special technic or do you consider it necessary in handling this membrane? My experience has been that the membrane shrinks or shrivels up and becomes useless.

DR. MORRIS.—I am glad these questions have been asked. It took me three years to find out how to use the membrane, and having found it out the trick was very simple. The membrane will stick to anything that is damp. It your fingers or gloves are damp it will crinkle up and make a little mess, and at first you will have a string of tissue of no account at all; you cannot smooth it out any more than a skin graft if it comes wrong from the knife. The trick is this: handle it with dry gauze, spread it out smoothly on a pad of dry gauze; get ready to put it on a moist surface, and put it on quickly and the dry gauze will separate from the membrane, leaving it smooth, and then it will adapt itself to the various folds of bowel and remain in place.

In placing it upon tendons, where you wish to wrap one or two tendons separately with this sterilized membrane, it is very important to arrange it, if you can, upon a strip of dry gauze and transfer it quickly. In addition, sometimes, after it is in place, I have taken a suture of the finest catgut to hold it there, but after it is put in place with dry gauze it will not be necessary to do that, because atmospheric pressure will suffice to keep it in place.

IN THE RELATION WE BEAR TO THE PUBLIC, WHAT USE SHALL WE MAKE OF OUR KNOWLEDGE OF THE EVIL EFFECTS OF VENEREAL DISEASE?

BY

ALBERT VANDERVEER, M. D.,

Albany, N. Y.

OUR Association came into existence at a time when pelvic and abdominal lesions were being studied with great earnestness. The advances being made in our understanding of bacteriology and pathology, together with surgical technic, permitted the doing of surgical operations at one time considered impossible. Papers were presented and discussions followed, developing a constantly increasing knowledge that established a position for the members of our Association on a high plane, and which attracted the attention of the public to the performance of operations that were surprising. We early had among our Fellows some of the best thinkers and workers of this country. The condition of pus in the female pelvis was very thoroughly investigated. Bold, brave, radical surgical methods were suggested and followed out. The discussions relating to these cases were clear and forcible, and at no time given in a spirit of censure, but with an earnest effort to always reach the truth. Among the Fellows who did so much, and in such a fearless manner, was one of whom it can truthfully be said he was the leader among leaders, and who will meet with us no more in this life. I refer to Dr. Joseph Price, a giant among all of his associates. In a more elaborate reference to his life work, and in a more suitable manner may his surviving co-workers do justice to his monumental efforts for the uplifting of his profession.

In the gross, macroscopical and laboratory examination and study of these pathological specimens it was soon impressed upon all that a large proportion of these conditions gave every evidence of specific infection, the husband, in many instances, carrying with him to the altar the germs that too frequently became the source of the disease that attacked his fair bride. How many sorrowful cases could we relate, and here I wish to emphasize

of how much value this line of study became to the general surgeon and, particularly, the genitourinary specialist, also in other departments of our profession. These early investigators soon recognized that the gonococcus produced the same destructive effect upon the male reproductive organs as in the female. In all of this accumulated knowledge, and in our advanced position outside of what has been done in educating our teachers, and the profession in general, have we accomplished our full duty to the parents and children of our immediate professional territory in imparting to them a plain statement of facts along lines of educational value? It is true that in our discussions, and largely in our lesser, more confidential circles, much has been talked over, a small percentage reaching into the lives of the relatives of the unfortunate patient, or striking deeply into the self-conscious feeling of guilt resting with the husband, possibly his immediate friends, thus reaching out as a warning to younger associates, but not imparting with authority as coming from an association commanding the confidence and good will, not only of our profession, but the public at large. We all know, and must admit, at the present day, how little the parents and unmarried men and women yet know of the perils that present in gonorrheal and syphilitic infection.

Some three years ago I attended a most interesting meeting at Los Angeles, at which there were present not only some of the ablest members of our own profession, but also of other professions. A most charming and intelligent Bishop of the Roman Catholic Church, an equally representative Bishop of the Episcopal Church, also clergymen from the Presbyterian, Baptist and other protestant denominations, together with representative members of the legal profesion were there, and never since then have I attended any medical gathering, or any other of our association meetings, attempting to discuss this subject, where such convincing arguments were advanced nor in such an intelligent manner. The mothers of young women, in spite of all knowledge that may be presented to them, will permit the marriage of their daughters, although warned of the dangers that may be before them; however, with better instruction given them there is certainly a lessening of this evil tendency. Ignorance of the danger that may surround the young woman leads to serious suffering which could have been avoided had she fully and clearly known the real condition of affairs. At that meeting the subject of "the white plague" was intelligently referred to,

but, in a more forcible manner a medical writer present, and whom we all respect, referred to the "black plague," giving his views in a very startling talk, yet only within a short period has the public understood what this term means. We have recently had some very able articles presented, which must make an impression upon the thinking reader, for our magazines, our daily and weekly papers are attacking this social evil in no uncertain manner. The very excellent article presented some time ago in *Pearson's Magazine*, by Dr. Howard, is a convincing argument for the necessity of a franker, clearer talk with the public. In a most charming manner he sums it up under the term "prudery."

It is not to be denied that the percentage of the young men in our cities and towns is very large, who carry with them the evidence of infectious disease, yet who enter upon marital relations, some in total ignorance of the distress they may bring to their young wife, but who, if intelligently informed, would shun the perpetration of such suffering.

The study of the condition of the poor, unfortunate shop girl, in our large cities, is being brought to the attention of the benevolent and philanthropic public in a very truthful, earnest manner, and now that they are convinced of so great a crime going on in their midst, homes are being established for the care of the young woman who is honestly endeavoring to make her living, but surrounded by temptations so great that she is at last, in far too many instances, overwhelmed. We have such centers of help, protection and positive assistance as the Waverly House, through the New York Probation Association, and the Y. W. C. A. in other cities, affording aid that is of real, practical value, but not until we as a profession had pointed out the dangers from disease, that were known only to ourselves and the unfortunate victims, has much a decided effort been made to protect these young women.

Such journals as *Leslie's Weekly* and *Colliers* are to be praised and commended for the able manner in which they are presenting this important subject to the thinking and resolute public. We must recognize that in this country where members of our profession were the first to call the attention of the public to the disease-bearing mosquito, live a people among whom there are many who can explain fairly well what is meant by surgical technic, and who are well able to define preventive medicine, who read with willingness anything bearing upon the habits

and dangers of the common house fly, and profit thereby, in all these we have an intelligent ear, most willing to listen to whatever we may, as a profession, have to say on the sorrows of the social evil.

Much that we have said may be applied to the younger members of the male sex. By this I mean as early as the tenth year, as Peter Harding, M. D., says in his admirable book, "The Corner of Harley Street," "boys of this age are mentally sexless." I wish that every member of our profession—am sure that a large portion of our up-to-date laymen will do so—would read his letter *x* on this subject. What he has to say is beautifully expressed in language clear and not to be misunderstood.

We now have radiating out from "The National Institution for Moral Instruction," a series of lectures which I am sure are destined to be of great help to the young man. (*Maryland Medical Journal* for August, 1911.) It is a line of thought and an effort to instil into the boy, as he reaches the age of manhood, respect for women; to treat each and every one whom he meets as he would wish his mother and sister treated, and while life has its charms, it is amidst social pleasures and enjoyments that temptation may present and must be resisted. Let him remember at all times not to tempt the young woman with whom, during vacation period or school life, he may be thrown in intimate relations, bearing in mind she is the sister of someone like himself, and under all circumstances exhibit toward her the respect, delicate love and affection he would show toward his mother. These are the conditions that are being studied from the standpoint of intelligent thought, giving us the able papers of European women who are seeking a change in domestic relations, and in the customs and morals so thoroughly discussed by Ellen Key, of Sweden.

One of the ablest articles covering almost this entire subject is to be found in *American Medicine* for August, 1911. "Morals and Marital Customs." "Marriage should be encouraged, never discouraged." "The evils of bachelorhood for both sexes are many." "Marriage should never be made difficult."

Is it not our duty to place before the public more clearly our knowledge of the evil effects of syphilis and gonorrhea, and thus, more and more, enable investigators who have the means, who have the inclination, to do something that will benefit womankind? It is true much is being accomplished by public lectures on sex hygiene, such as are being delivered in Chicago, New York,

Boston and other large cities, but it rests largely with the members of our profession to present the subject in an intelligent and acceptable manner. Good must result from imparting to the seeker after truth such knowledge as we have in our profession. If the damage done to the reproductive organs by the diseases to which I have referred were known to the contracting parties, is it not reasonable to believe there would be a less number of divorces? It is now plainly recognized that there is no part of our physical system so persistent in its demands as that of the reproductive organs, and we may consider it as we please, but the plain facts are before us. There is no better way of meeting it than to make the public understand all the dangers that surround the violation of clean, wholesome living, so far as the sexual organs and passions are concerned. It is not to be denied there is much in our present methods of living that deters many young men and women from marrying, because of the responsibilities that follow, as they believe in meeting all financial obligations, but there must be a solution of this problem, resting only upon the respect that the sexes have for each other. I am sure I state the truth when I say there is yet above all other conditions, such as social power and wealth, whatever may be the temptation, love for children remaining. Note the record of men and women who seek the adoption of a child. A fair percentage state frankly they are unable to have children because of some damage to the reproductive organs, as an error at one time in their life. I am impressed with the fact that what has already been accomplished by our Association, and by our profession in general affords much encouragement. I am sure we are dealing with a people who desire a plain statement of facts, be it the social evil or otherwise. Above all let us present the facts to our children in such a manner that they may not hesitate to call the sexual organs by their proper names. Let them understand, when planting white and black seed corn side by side how a mixing of the two occurs. Teach them early the fertilizing of the egg and why one setting produces thirteen chicks and another nine or less.

Save the boy and girl from past ignorance regarding their reproductive organs. If we do not advance in the understanding and presentation of this subject to ourselves, and our youth, we must expect the charlatan and libertine to continue in control of the situation.

When the question is once well understood, tremendous as it may seem, many sorrows and much suffering will be avoided.

DISCUSSION.

DR. CHARLES A. L. REED, Cincinnati.—I take it as a wholesome sign that this association and kindred associations are getting beyond the simply technical limitations of their proceedings, and are entering the broader realm of sociology, because say what we may and do what we may, the fact remains that the work in which we are daily engaged has a direct sociological bearing. I presume there is no postulate that will command more uniform recognition and support than the one that he who violates a natural law must pay the penalty, and that this natural law underlies morality as well as it does mere physical existence, and that the higher we go in this complex organization of society, the more distinct indeed becomes the application of this postulate. What is true of the individual is true in like measure of the aggregate of individuals. What is true of the individual is true of that unit of society known as the family. This translated into the concrete simply means that the natural law applies in such wise as to affect happiness and unhappiness; such wise as to place us in harmony with our environments, and suchwise as to put us in complete conflict with our environments. That individual who has so far solved the problem of understanding the natural laws of existence, and has made that understanding a part of his daily life and daily activities, fulfills the object of existence in fuller measure and with more satisfaction and more happiness than the individual who goes blunbering along without this conception of the overruling law.

Now, the deterioration of the French people, as manifested by their lower birth rate and by the evidences of their lowered general efficiency, is in large measure doubtless due to the violation of these natural laws underlying the great problem of reproduction. The time was for many years when the venereal diseases possibly found a larger proportion of victims in Paris than in any other city of the world. That time has passed. Mr. Lecke years ago called attention to the hypocritical attitude of the English public in their position not to regulate prostitution, and in their "Holier than Thou" attitude permitted this crime to develop and fester in the very heart of the empire until the evidences of its ravages were to be found in homes among innocent women and still more innocent children. I presume that to-day the English people are the most thoroughly syphilized people outside the Orient, simply because the fundamental principle touched on by Dr. Vander Veer has been utterly ignored in the English system of education. It is the one question that is tabooed in the nursery, at the fireside by the family, and in the schools and other places, and I presume that there is no place in

the world, considering the intelligence of the people, in which there exists such profound ignorance upon questions sexual than in this same country of England. Let this question no longer be tabooed, but let it be taught in schools, and colleges, modestly, but decently presented to children, and presently we shall find a distinct improvement in the race that can only come from an intelligent understanding of the situation, which will bring its remedies, and the thing to do is to take the horrible facts in all their tragic significance and lay them before thoughtful parents, before thoughtful educators, and place them along the highways of education by which the rising generation will be more intelligent than is our own.

I think we are indebted to Dr. Vander Veer for bringing this question before the association, which is in a position to speak authoritatively on the question. Every gentleman who is a member of this association daily sees the ravages in his hospital service of these diseases, and especially among the low. In my Cincinnati hospital service, I should say from seven to nine-tenths of all my work results from a violation of the natural law of morality, which translated into vulgar English means the ravages of gonorrhea and syphilis. This does not apply to my private work. There the proportion is absolutely the reverse, and that simply means in the higher walks of life, where greater intelligence obtains, where the conventionalities of society exercise a more or less restraining influence, where, I am quite sure, the whole moral status is improving and growing and developing—there these diseases do not show their ravages as they do among the lowly and the ignorant. These things will be confirmed by practically everyone here. They point to the necessity of popular education along this line, and by earnest, scientific gentlemen, and ladies for that matter, who are back of the educational movements in New York and Chicago and elsewhere.

I trust that this association as an organization, and that its members in their individual capacities in their respective communities will not fail to give a great impetus to the matter which has been brought before us so carefully and scientifically.

DR. AP. MORGAN VANCE, Louisville.—I would like to say a word regarding a practical way of getting this matter before the public from the standpoint of the doctor. We cannot beat around the bush; we have to call a spade a spade. When you talk to the public about these matters they do not understand what the word gonococci or spirochetæ may mean. You must call these things by the simple names and then they will understand.

I had occasion some years ago to address a literary club which is composed of the representative men of the city, such as lawyers, doctors and business men, and while these men talked very intelligently on other subjects, we soon ascertained how ignorant they were with reference to these matters, and what

was going on in the world. Even the preachers did not know anything about it, and most of the other men did not know very much about it. I read a paper on the social evil from the standpoint of the doctor in which I called a spade a spade, having numerous illustrations of the different venereal lesions and explaining to the audience what they meant. And I want to say to you, that it takes a man with a good deal of courage to do it, as was evidenced from the comments afterward. They said it was nasty. It was after dinner, and some of the men became sick. One old German, who spoke in broken English, said that such a paper made him sick. (Laughter.) I told him, I will give you another dose next time. Subsequently I read another paper, on sexual perversion, and I gave them the whole matter from beginning to end. This paper produced such an effect that if it had not been for a Baptist minister, a former missionary to Florence, Italy, who came to my rescue, I do not know what they would have done to me.

In the last twenty years people seem to have become a little better educated with reference to these matters. In consequence of that, there are a great many lectures now given on the social evil. I was invited by a younger member of the club, a lawyer, who was interested in social questions of this kind, to come to his Church just after the close of the Sunday School and repeat this lecture I had previously given. I thought it over for two days before I accepted, and then I concluded that I would do so. I got all of the illustrations with which you are familiar and had them nailed on the chancel, and I told them what they were. I spoke of the vulva, the penis, the lesions of syphilis, and I went into the ramifications of the whole thing. I called these diseases by names which the boys could understand. This lecture was appreciated, and I had a call to address another church audience. And that is what we have got to do as physicians; we have got to commence with the parents and gradually reach the children. The sooner we bury our old ideas of these things and go ahead, and call a spade a spade, the more good we will do.

There is another side to this question that I want to touch on briefly. If any one were to ask me what produces more unhappiness than anything in the marital relations, I should say it was the efforts of young married people to prevent conception, and they do not seem to think about it. A beautiful girl, shortly after she has been married, wilts, and so does her husband. A good deal of this is due to the efforts to prevent conception by mechanical means. The sexual act has got to be spontaneous. If a woman enters into that act and expects to get up immediately thereafter and douche herself with cold water without doing herself harm, she is very much mistaken. The same thing is true of the man who uses a condom, and if he withdraws his penis previous to emission it is worse than anything, and the devil is to pay as the word goes.

THE PRESIDENT.—Some of the members have doubtless not

read what Goodell has to say on this subject. If they have not, they had better do so, because he gives a most beautiful presentation of a delicate subject.

DR. VANCE.—In my lecture on the social evil I referred to a lecture given by Marion Sims at the Centennial of the American Medical Association, it being his inaugural address, the major portion of it being along this line, and he talked very plainly on this subject.

DR. VANDER VEER (closing the discussion).—I wish to thank the members for their kind discussion of my paper. For ten years or more my mind has been in the direction of thinking how we could approach the boy of ten years of age, and the girl perhaps of the same age, or just about the time when she has her first menstrual period. A boy ten years of age is not too young to be taught some of these things. I remember such a case, and the mother stated "Johnny is not very well," the boy replied "Doctor, there is something the matter with my tea pot." According to the lecture given by Dr. Vance, Johnny ought to have been told something about his penis, and the girl should understand something about her vulva, and so on. There are many intelligent people who know a good deal about the gonococcus, and I now have in mind the mother of four or five children, who is the head of one of our most excellent families, who employs a number of servants, and I was somewhat surprised two or three years ago at being interrogated in regard to one of her maids whom she had had working for her but a very short time. She said to me, "My maid is using a fountain syringe; I do not like the appearance of the syringe that she uses." and she said "I would like to show you this syringe and have you examine it. Do you suppose there are any gonococci there?" Now, this was a nice clean woman, a woman who raised her children in a strictly moral way, and who was thoroughly posted in regard to infectious diseases regarding the reproductive organs. She was not the member of any club, but she took care of her household. I have had nothing so impressive as that mother, with three daughters sitting at the table, a newly married son, sitting opposite the oldest daughter, with a little girl sitting to her left. The little girl said ,"Mamma, the black hen has got twelve beautiful chickens; two eggs are no good. Mamma, the yellow hen has got only six chickens and she has just as many eggs." The daughter, who was a recent graduate of Wellsley, looked up and said to her, "Mary, the eggs of the last setting hen were not properly fertilized." The little girl looked as though something dreadful had been said to her, and she did not know what that meant, but the mother came to her rescue, and said, "Mary, I will tell you after the dinner is over." Our children ought not to grow up so thoroughly ignorant with regard to these things. Look at the failures they make when they reach the age of puberty in the endeavor to find out what their sexual organs are.

PERSONAL OBSERVATIONS ON CANCER.

BY

J. GARLAND SHERRILL, M. D.,

Louisville, Ky.

RECENTLY in making a study of the cases of cancer occurring in my private practice, I found some cases of sufficient interest to be reported. I have been able to follow 208 of these cases and trace them to the present time. Among these cases different portions of the body were affected, as shown in table on following page.

Abdominal.—Nineteen operations; eleven living, five past the three year limit; others died from twelve to eighteen months.

Vaginal.—Twelve operations; four living three to twelve years after operation; eight had recurrence; dying within eighteen months.

Causation.—We know so little concerning its cause that it would be unprofitable to go into an extensive discussion of the various theories offered to explain the origin of cancer. The views of an individual upon this point will depend upon whether he studies cancer in the living or in the dead subject. Almost without exception the pathologist attempts to explain its origin upon the basis of cellular change or displacement. On the other hand, the men most familiar with the clinic manifestations of the disease, with some exceptions, are searching for a contagio vivum.

In December, 1901, in an article entitled "Is Cancer Due to a Parasite," the writer discussed some of the theories, attempting to explain the development of cancer and cited a number of cases where there was seemingly contact infection and also some to be traced to cancer houses, from which article I will quote rather freely:

"As an accepted axiom, we may state that cancer is primarily a local disease. This statement, I believe, will not be denied by any one at all familiar with its study. This being true, why does it not remain a local process as is the case with benign tumors?

	Carcinoma.	Sarcoma.	No. operations.	Operative deaths.	Local recurrence.	Metastatic recurrence.	
Breast	40	.....	34	.....	8	6	8 living past 3 yr.
Uterus*	37	.....	31	1	16	.....	6 living past 3 yr.
Intestine (exclusive of the rectum.	28	3	18	8	10		
Rectum	8	.....	8	1	5	.....	1 living past 3 yr.
Mesentery	6	.....	2	.....	Not removed		
Stomach	10	.....	7	1	4	.....	1 living past 2 yr.
Ovary	4	.....	3	.....	3	.....	Lived 1 1/2 yr.
Bile duct	2	.....	1	.....	1	.....	Lived 1 yr.
Gall-bladder	8	.....	5	3	2	.....	Lived 1 yr.
Liver	6	.....	2	.....	Not removed.		
Spleen	1	.....	1	1			
Kidney	1	.....	1	.....	.....	.....	Died of intercurrent pneumonia, perhaps malignant.
Pancreas	2	.....	2	.....	Not removed.		
Jaw	10 (Upper)	5 (2 upper) (3 lower)	18	2	5	.....	4 living past 3 yr.
Orbit	1	.....	2	.....	1	.....	Died within a year.
Lip	13 (11 lower) (2 upper)	.....	14	.....	2	1	10 living; 6 past 3 yr.
Face and cheek	6	.....	6	.....	1	.....	4 living past 3 yr.
Nose	2	.....	2	.....	1	.....	Lived 1 and 2 yr.
Scalp	2	.....	3	.....	1		
Thyroid gland	1	.....	1	1			
Hand	2	.....	2	.....	.....	.....	Lived 2 and 3 yr.
Arm	1	1	2	.....	.....	.....	2 lived past third year.
Leg	2	.....	2	.....	.....	.....	Both living over 3 yr.
Thigh	.....	1	1	.....	1		
Vulva	2	.....	2	.....	1	.....	1 living over 3 yr.
Meatus Urinarius.	1	.....	1	.....	.....	.....	1 living over 3 yr.
Penis	4	.....	4	.....	.....	.....	1 living over 3 yr. (3 living 1 to 2 yr.)
Testes	.....	2	2	.....	.....	.....	2 living 2 yr.
Neck	.....	2	2	.....	.....	.....	2 living over 4 yr.
Abdominal wall.	.....	1	1	.....	.....	.....	1 living over 3 yr.
Buttock	.....	2	1	1	1		
Back	.....	1	1	.....	.....	.....	1 living over 2 yr.
Pelvis	.....	1	1	1			

*Hysterectomies.

Can we accept as a sufficient cause of metastasis, the conveyance of an epithelial cell or a group of epithelial cells to a part of the body in which such cells are abnormal? As observed solely from the clinical aspect, cancer presents some features only found in infectious diseases. It finds first a local lodgement, then instead of displacing the tissue it spreads locally and destroys the contiguous structures, fascia, muscle, blood-vessels and bone. Moreover, not content with the local invasion, it is carried through the lymph stream as well as the blood current to distant parts of the body, where it again institutes a pathological process which is essentially progressive. And at this point it appears quite reasonable to claim that all progressive pathological conditions are due to an essential cause capable of reproduction within the living body. Even those authors who refuse to see in this condition an infectious process will allow this statement, namely, that removal even early, to be successful in preventing recurrence, must be very radical; and, moreover, that an incomplete removal of a malignant growth must, of necessity, hasten the spread as well as the fatal termination of the disease.

Now, in what way are we to account for this increase in the malignancy of the process save in one way—by the operative procedure opening up new areas for the entrance of the infectious element. A similar condition is found in the rapid development of general tuberculosis which follows incomplete operations upon local tuberculous foci, especially of the lymphatic glands of the neck. I can recall a case illustrating this point which came under my observation. At operation I removed the uterus by the combined abdominal and vaginal method, in a most radical way for beginning carcinoma of the cervix. The operation was performed so early that there was some question as to the malignancy until the microscopic examination confirmed the diagnosis, the chief symptom noted being hemorrhage. Locally a small, hard nodule could be felt with difficulty. All possible care was used to protect the surrounding tissues and the abdominal wound. Some four and a half months later this patient returned and examination revealed a firm, hard nodule about the size of a walnut in the lower part of the abdominal cicatrix which apparently was not connected with the deeper tissues of the abdomen. Vaginal examination revealed a marked local recurrence in the regions adjacent to the original site of the uterus. Here, I believe, we have a case fully demonstrating

an inoculation of the abdominal wall with cancer during the operative steps undertaken for the relief of uterine carcinoma. Undoubtedly this is not a unique case and all experienced operators must have met similar conditions. Not only is inoculation possible in a patient suffering from cancer, but inoculation from man to man has occurred not infrequently, notwithstanding the statement of Senn "that no well authenticated case of inoculation carcinoma has occurred among surgeons who have frequently injured their fingers and hands during operations for carcinoma, while inoculation tuberculosis from the same cause has been frequently observed." He says "the same can be said of persons who take care of carcinoma patients or who live in the same room." (*Journal A. M. A.*, Sept. 28, 1901). This statement is completely refuted by Dr. Robert Behla (Royal Circuit Physician in Luckau) in *Deutsche Medicinische Wochenshrift*, July 27, 1901, in an article entitled "Ueber Cancer a deux und Infektion des Krebses." He cites a number of cases which seem to show undoubted contamination of those attending cancer patients. He states that when his topographic chart of Luckau is examined, many neighboring cancer houses can be seen. "In the Gartengasse it occurs almost house to house, in truth a cancer lane." He cites among a number of others an interesting case reported to him by Dr. Elsler for a time assistant at Nietleben. Landlord B., in Burkersdorf, near Altenburg, took sick of carcinoma recti and died of the same in 1898, aged 55 years. His son-in-law, Landlord M., who lived in Nebendorfe Grosstrobnitz, attended him and gave him nutrient clysters daily for six months. A short time after the death of the father-in-law, the son-in-law sickened of a cancer of the lower lip. The latter was removed in Leipsic, but reappeared a year and a half later. While the son-in-law was sick, the wife became attacked with a carcinoma of the breast, which was also removed in Leipsic. In the families B. and M. there is no heredity tendency. This report of Elsler is affirmed on oath. He also quotes a case reported by Boaz, who relates of a young woman whose mother died of an intestinal cancer and whose aunt on mother's side died of cancer. This young woman attended her mother and used a clyster tube which her mother had discarded. In six months she developed an intestinal cancer. Moleire saw a case of cancer communicated by means of a pipe. Deves cites two similar cases and also one of a woman who contracted epithelioma of the finger from washing the clothes contaminated by her husband who was sick of

cancer. Morau relates of a pharmacist who dressed a face cancer of his mother-in-law and from it became attacked with cancer of the nose. Among the other cases collected by Behla is the renowned one of Tross, where a cancer of the penis developed from a carcinoma uteri. This Behla considers a direct contamination, and believes with Czerny that such cases occur seldom because in this condition coitus is little exercised. But Guiellot has collected twenty-three similar cases, Hall five, Langenbeck three, Demorquay, Thomas and Deplouy, one each, and Macewen eight cases of a similar nature. Ebert, in his work "Concerning the Infectiousness of Cancers" has collected twenty-two cases in which a direct transfer took place in the same individual as from lip to lip, from tongue to gums, or tongue to palate. Park calls attention to a recently reported case in which epitheliomatous ulceration followed an extensive burn on the side. The cicatricial contraction held the arm to the side with a resulting carcinoma of the arm from contact. Behla also calls attention to the cases of physicians who have become infected with cancer by inoculation, viz., that of Alibert, reported by Lemiere, also a surgeon of St. Thomas Hospital, who died of cancer of the tongue after tasting of cancer juice. Budd in ten years has seen five surgeons in a cancer hospital die of carcinoma. Emson died eight months after he had injured himself in a cancer operation. Guermonprez mentions a medical student who became infected through an acne bump while examining an uterine cancer.

These reports appear to me quite convincing and I will reply to those who claim that if cancers were infectious surgeons would oftener be attacked with cancer, in the language of Czerny who says that surgeons are accustomed to carry out an excessive cleanliness in operations, also that physicians are attacked no more frequently than other men by the doubtless more infectious tuberculosis with which they come into contact much oftener.

The epidemic of cancer which occurred without inoculation among the white rats in the cellar of the pathological institute at Freiburg is mentioned by Behla. The experimental work of Follin, Lebert and Gaylord, seems to show that true cancer tumors may be produced by inoculation, and Langenbeck successfully inoculated a dog. It would seem from these experiments that cancer can be transmitted by inoculation. This fact, studied in connection with the reports previously mentioned, and the fact of metastasis in cases where local disease seems to be entirely eradicated by operation tend to lead one to the belief that car-

cinoma is due to an actively proliferating poison or entity; in other words a living organism.

It seems to me no more difficult to explain the development of local tuberculosis after a slight traumatism, infection being carried through the blood, than it is to explain the development of carcinomatous tumor in the same way by metastasis. We are forced, however, to admit that this living cause is unknown, and until it is demonstrated the question of necessity remains unsettled. In addition to the actual cause of cancer we are bound to admit of a predisposition on the part of certain patients in whom the tissues are probably receptive to this disease. This receptivity may be the result of heredity, although in my cases heredity cannot be traced in a very large percentage, 7 per cent.

Not so much importance is at present placed upon heredity as a direct causative factor as upon the hereditary predisposition which allows the onset of malignancy. It is now claimed by some that cancer occurs no oftener in families where cases are recorded than in those free of such history. E. E. Tyzzer, of Boston, in the *American Medical Journal*, October 29, 1910, on this phase of the subject quotes Pearson, "who found from data furnished by Hillier of the Middlesex Hospital, that in the antecedents of 2368 women with cancer, 359 with a history of cancer, and in the antecedents of 753 non-cancerous women, 102 with a history of cancer. With a probable error of 0.04, the coefficient of 0.0335 for the cancer heredity is opposed to the inheritance of this condition. Pearson states that although these results are not final, they tend to show that there is no marked inheritance.

Bashford found in the data obtained from 669 cases of cancer that there was cancer in the father in fifty-eight cases and in the mother in 114 cases. These proportions of 1 to 11.5 in the fathers and 1 to 6 in the mothers are almost identical with those obtaining for the general population dying from all causes. Giullot has obtained similar results. He found a history of cancer in 10 per cent. of the antecedents of non-cancerous and in 17.4 per cent. of the antecedents of the cancerous hospital patients. He found that a greater proportion of the parents of the non-cancerous were still alive and, revising his figures on this basis, he estimated the incidence of cancer in the antecedents of the non-cancerous as 16 per cent. against 17.4 in the antecedents of the cancerous. His statistics obtained from city records showed cancer in 18 per

cent. of the non-cancer antecedents and in 16.6 per cent. of the cancer antecedents. Most of the recent statistical inquiry has, therefore, tended to disprove the heredity of cancer."

Undoubtedly trauma and irritation are important factors in the determination at least of the site of a malignant neoplasm. Dr. Coley goes into this phase of the subject very thoroughly in an article presented to the Southern Surgical and Gynecological Society at its last meeting, and quotes a large number of cases in his wide experience in which there is conclusive proof clinically and microscopically of the very prompt development of cancer after an injury, sometimes within a week.

Dr. Irvin Abell, in a recent number of the *Kentucky State Medical Journal*, quotes the case of a woman who developed breast carcinoma within forty-seven days after an injury. In one of my own cases, epithelioma developed within three weeks after an injury in a previously sound upper lip, followed by the application of a piece of tobacco as a soothing remedy. In another instance a hemangiosarcoma of the pelvis developed in a few weeks after an injury. The incidence in these cases and some of those reported by Coley is, to say the least, very striking. We must not overlook, however, the possibility of the injury simply causing increased rapidity in a cancerous focus already present.

Irritation, too, can be traced in a considerable per cent. of cases as an exciting cause of cancer, especially of the epithelial type. Park, in a paper read at the same meeting of the Southern Surgical and Gynecological Society (*S. S. and G. Trans.*, vol. xxiii, p. 348) considered this phase of the subject and also that of a living contagion. He says, "There is therefore no need to disregard the belief that somewhere behind the mystery of cancer there lurks a living extrinsic agency—a contagium vivum. To hold to this working hypothesis will clarify rather than befog our vista."

My cases show 8 per cent. in which trauma was noted, and 18 per cent. in which irritation was a factor. Irritation of a wart or a mole often results in malignancy, as we have all seen very frequently. Have we not also seen cases in which, following an ineffectual effort to radically remove a cancer, there occurred prompt and increasingly rapid growth, only explainable as being a direct infection or contamination of the surrounding healthy tissues. In the effect of the frequently repeated exposures to the *x*-rays we have an excellent example of the effect of irritation

in the production of malignancy. In this instance nearer than any other does there seem to be an actual causative action.

A very striking coincidence to say the least has occurred in my cases. Of four epitheliomata of the penis, two occurred in men whose wives had uterine cancer. One sister developed carcinoma of bile duct and later of gall-bladder in the same room in which sister died of cancer of the uterus a short time before, and in another case a son had carcinoma of the rectum at the same time his mother was suffering from cancer of the uterus.

It is somewhat difficult to explain why in one instance a very rapid course is run by a cancer, while in an apparently similar case the progress is very slow. In part this may be explained by diminished tissue resistance on the part of the patient, and part to a more virulent causative factor. In my experience, external cancers are much more amenable to treatment and show more permanent recoveries than those attacking the viscera.

Irregularity of the bowels, constipation, then diarrhœa with blood free or occult in the stool should cause a suspicion of malignancy disease of the intestine. Flatulency, cramping pains and tenderness are usual accompaniments of a constricting cancer. As the disease progresses a marked and progressive loss of flesh occurs which is greatly out of proportion to the discomfort of the patient, even when the appetite is good and the digestion appears to be normal. All of these symptoms may be present before any appreciable tumor can be detected, yet occasionally either tumor or complete obstruction first call the patient's attention to his condition. When a suspicion exists operation is indicated.

In the rectum with the later methods of examination the disease should come to operation much earlier than has been the case hitherto.

Cancer of the stomach is being recognized much earlier than formerly because of more careful physical examination, the result of gastric analysis and the use of the *x*-ray as well as a recognition of the fact that the so-called classic symptoms of carcinoma ventriculi, as pain, tumor, loss of flesh, cachexia and vomiting, are only the symptoms of the disease in its advanced stages. The question of diagnosis in the early stages of cancer is of the utmost importance for the best results. For such to obtain we must have the co-operation of both the laity and the profession, accompanied by the most painstaking examination of the patient when he presents. Just here a word of caution should be uttered; it is not well to be too cock-sure

of a diagnosis of cancer in some cases and give a very grave prognosis to find the patient going on to recovery. I can recall several instances where such a mistake has been made by some very competent observers.

I met a case of gastric disease in a woman of fifty-five who gave a history of ulcer six years previous to consulting the writer, who had lost flesh, been unable to retain food for nearly two years, and for six months had not retained fluids. At operation a nodular mass was found in the stomach which infiltrated the lesser omentum and invaded the liver, the latter being indurated with new tissue and nodular over an area three inches square. She had no syphilis. Her condition was such that no tissue could be removed for examination, and a rapid gastroenterostomy was made. The mass was considered by all present to be undoubtedly malignant and this opinion stated to her family. She recovered from the operation and has remained well for four years—to the present time.

Bretschneider (in *Archiv. für Gynaekologie*, Berlin, xcii—No. 1) claims that the prognosis of cancer in the so-called hopeless cases should be guarded, as instances are not lacking in which an apparently incurable growth subsided under merely palliative measures He mentions a typical case of the kind in a woman of fifty-three having a supposed inoperable carcinoma of the uterine cervix, which was so favorably influenced by repeated operations that at present there is no trace either macroscopic or microscopic of local malignant disease, and the metastatic foci have been arrested in their growth and have partially retrogressed.

The results in my limited number of cases show very readily the improvement in end results when radical surgical treatment is applied early. This seems to be the experience of practically all observers. I believe the profession is not greatly at fault in the failure of patients suffering from cancer to come early for operation, except, perhaps, that some cases are overlooked because the attendant does not attach enough importance to the primary symptoms expressed by the patient. The lay mind has a terrible dread of cancer and a tendency to conceal even a personal suspicion that such a disease is present. A lady of eighty years came under my observation who had evidently had a breast tumor for years, but she only consulted her attendant for a swelling in the arm incident to a carcinomatous enlargement of the cervical lymphatic glands. A very important factor in the

failure of these patients to apply for treatment is the formerly promulgated belief that cancer always produced pain, and that ulceration and marked cachexia appeared early. In many instances the pain in the early stages of both mammary and uterine cancer, as well as others, is a negligible quantity. Ulceration, cachexia and anemia are late symptoms and appear when relief by operation is uncertain.

In the case of uterine cancer the disease may be present for a considerable time in the fundus without any symptoms whatever; while carcinoma of the cervix will reveal itself earlier by hemorrhage, which varies greatly in amount and the time of its appearance, and by a watery discharge. Hemorrhage which is easily excited by contact is always suspicious. Any hemorrhage which is abnormal in amount or irregular in time of its appearance, especially if occurring at or near the menopause, should call for a careful physical examination.

These facts are very familiar to the members of this society, and it is our duty to emphasize them to the profession by frequent repetition and thus endeavor to properly inform the public upon this point. Unfortunately our knowledge of the actual cause of cancer is practically nil. We do know, however, that at its inception cancer is essentially a local disease; that its tendency is to progress steadily to a fatal termination, and that we have no method of determining just when the invasion passes beyond the local condition. Usually this occurs when the disease passes the limits of the primary organ attacked, and it is the hope of the surgeon to make his operation before this has occurred.

CARE OF CANCER CASES.

To obtain the best results 1. the patient must present early for treatment. 2. all suspicious growths should be removed. Keen and others go so far as to recommend the removal of all superficial growths lest they become malignant.

In case of the breast, all growths in women over twenty-five should be removed and when even apparently benign examined to determine this point, so that more radical operation can be done immediately; or, if it is preferred, frozen section can be examined at the time of the operation and reported before the operation is complete. Many, with reason, advise against exploratory puncture unless promptly followed by operation, as the examination just mentioned is liable to spread the disease.

While I must confess that I have had both local and metastatic recurrence in cases where it was used, like Coley, I consider the knowledge obtained in this way so great that we must employ the method in many doubtful cases. Where a case is almost certainly cancerous the operation should be made (without frozen section) wide of the growth to prevent contamination of adjacent structures.

With reference to the various serum treatments we can only say that so far they have been disappointing. I have used the ascitic fluid of one patient recorded above injected into her own tissues with no marked benefit, although the disease seemed not to progress during the time of its employment. Fulguration has not accomplished much, nor has the *x*-ray done more than the knife or cautery can accomplish in a more thorough and certain way, although Pusey says in *Journal A. M. A.*, vol. lv, p. 1611, 1910, that he has been well satisfied with the use of the *x*-ray in superficial cutaneous malignant growths. Clinton of Buffalo and others are experimenting with cancer residue used as injections.

What is to be done for those cases in which operation has failed or which are already inoperable? The various palliative measures must be employed to control pain and hemorrhage and lessen the discharge; opium for the first; and there is perhaps no remedy equal to the actual cautery to lessen discharge and control hemorrhage, especially that resulting from uterine cancer. Remarkable benefit often follows this treatment, the patient's life being both prolonged and made more comfortable. Gelhorn has proposed the employment of acetone locally after cauterization of carcinoma uteri to harden the tissues and hasten healing, as follows:

"After new growth is excavated as thoroughly as possible the acetone is applied through a Ferguson speculum. The pelvis can be elevated and the solution poured into the speculum, but care must be taken not to allow the acetone to come into contact with the external parts. The acetone is allowed to remain in contact with the raw surface from fifteen to thirty minutes, then the surplus should be taken up with cotton. He advises that this treatment be repeated every two or three days and claims to relieve the patient of the main symptoms.

While it is true that a considerable number of cases of cancer are curable by radical surgical treatment, in a much larger percentage the cases are hopeless before they come under observation. The public should be made familiar with all the

known facts regarding cancer and be urged to submit any suspicious lesion for examination so that, if possible, the condition may be relieved in what is called the pre-cancerous stage. So far as I am aware very little has been done by any of the health departments looking to the prevention of this most fatal malady. This is in part due to the divergence of opinion as to its causation. It would seem reasonable, in view of its supposed infectious character, to urge the attendants of a cancer patient to avoid allowing the secretions to come in contact with the unbroken surface and to use the most stringent measures of cleanliness in the care of these patients. A room in which a cancer patient has lived should be carefully disinfected. Such measures can result in no harm and may be of benefit in the prevention of the spread of the disease.

DISCUSSION.

DR. ALBERT VANDER VEER, Albany.—Mr. President: I would like to ask Dr. Sherrill what he means by the third-year limit, whether the disease is to appear in the original scar or neighborhood, the lymphatic line of involvement, or whether the recurrence is to appear in some other portion of the body later than the third year limit. Also as to being sure in making a diagnosis of cancer in the neighborhood of the sigmoid flexure. Of course, with our recent methods of examining the rectum and the new instruments we have, such as the protoscope, and so on, great advance has been made in comparison with the work done by us thirty or thirty-five years ago.

I was very much impressed about two weeks ago in going around with my son, Dr. Edgar, who was showing me some of his cases after I had been absent from the hospital for several weeks. He said to me, "You will be interested to see this lady in here; she will know you as soon as she sees you. You operated on her eighteen years ago, and I operated on her a week ago."

I had attended this patient when she was about thirty-six years old, eighteen years previously. She had been suffering for some months from chronic constipation, as she stated, her bowels very difficult to move, and at last a complete obstruction resulted. When brought to the hospital she was in such a serious condition, nothing more than an enterostomy could be done. I made a diagnosis of some malignant growth in the neighborhood of the sigmoid. Patient made a good recovery, the artificial anus behaved so well, and she was so comfortable that she did not apply for further relief until in the hospital at the time indicated by my son, when she was again suffering from a complete obstruction of the bowel, and her condition such that only a rapid

exploration could be done. The doctor made a median incision, and found a number of adhesions in the neighborhood of the sigmoid, but could not feel any hard mass. Another enterostomy was done, and from which she made a good recovery. Afterward a third operation was done, and resection of a portion of the descending colon, which presented a point of decided fibrous stricture, Murphy button used, and patient is now well.

Another case was that of an engineer on the New York Central Railroad, and about forty years of age. He had noticed for three or four weeks a rather persistent desire to go to stool, but did not succeed in getting a thorough movement of the bowels. He had not consulted any physician. Forty-eight hours previous to the time I saw him he was taken with nausea, while on his engine, vomited and complained of pain in his abdomen. Upon reaching home called his family physician, but the latter did not succeed in getting a movement of the bowels either from carthartics or enemata. Patient gradually grew more ill and when I saw him at the end of thirty-six hours he had decided acute obstruction of the bowels. It was during the meeting of our State Medical Society and Drs. Weir, Wylie and others saw him with me. I operated immediately and found a malignant stricture, wider than my finger, completely encircling the colon, near the sigmoid flexure. The Murphy button was used. At the time the man had a marked peritonitis developing and from which he died at the end of forty-eight hours. Had this patient given proper attention to his case earlier, successful relief could have been afforded him.

In the first operation there was undoubtedly an error, in diagnosis. That woman did not live eighteen years with malignant disease. We should not be cocksure of our diagnosis in cases of disease in the neighborhood of the sigmoid flexure. I look back and remember as to the diagnosis I have made in the past years with a good deal of embarrassment regarding these growths. As Dr. Sherill has pointed out, formerly we were too sure.

With reference to the point of contagion, I cannot believe that cancer is contagious by direct contact, *i.e.*, from patient to patient. I believe a house may become infected.

In my presidential address, before the American Surgical Association, 1905, I reported a number of cases bearing upon this subject.

DR. SHERRILL (closing the discussion).—Some of my cases have been so striking and some of the literature I have read so remarkable, I must say that I believe there is something in the infectiousness of cancer. We recall the fact, however, that the most infectious lesions we have are rapid in their course, such as infection with suppuration, whereas in the slow lesions, where the infectious nature is slight, the disease is persistent. For instance, tuberculosis is often acquired through a minute abrasion without any local reaction, and the patient does not know when the disease was acquired, and it runs a chronic and slow

course, but essentially a progressive course. I believe such a contagion can be present in carcinoma. One may be exposed a number of times to carcinoma and not contract the disease, but if the disease is acquired in such a way and the progress of the disease is slow from the beginning of the infection, it may develop later on or at some remote place from the entrance of the poison. Many try to establish the theory that the cells are displaced, and that they proliferate or grow, but they do not explain why the cell acquires excessive activity and great reproductive power. Some have gone so far as to claim a division of cells first, and soon we have developed this malignancy. Irritation, traumatism and heredity provide a favorable soil, but we must look for an essential contagion. Take the case of the woman I mentioned, who had both breasts removed at different times without local recurrence in every case, and yet later she develops cancer in the glands of the neck of the uterus—a small polyp. This was rather remarkable to me. It, more than any case I have seen, tends to disprove the idea of a special poison. It is not likely the poison came from the blood and became located in the uterine glands. She does not have a local recurrence in either breast; she lives two years between operations, and lives six years or more after the primary operation for cancer of the breast without a local recurrence, but has her system saturated with the disease.

SOME FACTORS IN OPERATIVE TECHNIC AND MANAGEMENT WHICH MAKE FOR SUCCESS OR FAILURE.

BY
WALTER B. CHASE, M. D.,
Brooklyn, N.Y.

My paper is fragmentary. From necessity it must be so. In the multiplicity of what I would like to say, much is perforce left unsaid. It is hoped its usefulness will appear as much in its suggestiveness as in its positive statements.

As a preliminary to all operations, and this is of universal application, there must be some effort made to determine the resistance of the individual patient, save in case where the operation is imperative, not selective.

Briefly, 1. Ascertain with accuracy any variation from a normal standard of health—functional or organic—such information will go far in determining for or against operative interference. This includes a precise knowledge of any involvement due to concomitant disease apart from the surgical condition for which operation is proposed.

Too often co-existing disease of the circulatory, respiratory, renal, hepatic or digestive organs is overlooked, and the patient subjected to unwarranted risk of operative procedure without any qualifying influence their presence might suggest.

2. That inherited longevity,—other things being equal,—exerts a most salutary influence on the chance of recovery after surgical interference, cannot be gainsayed.

The perfect balance of health, seen in individuals and families, oftentimes coincident with splendid physique, but with a short lived ancestry, die when that "perfect balance" is disturbed from comparatively mild attacks of sickness, or fail to rally after major operations, or accidental injuries.

These facts have due weight in deciding for or against an operation. Without such scrutiny, a high rate of mortality, and avoidable disappointment, too often follows. Seek out with scrupulous care the former history of the patient in previous illness or accident. If, after severe acute disease, recovery follows with little or no impairment of vitality, or when the patient has had a

satisfactory convalescence from serious injury or grave operation, it adds much to the chances of a successful issue, which, without such assurance, might or perhaps should not be undertaken.

3. The surroundings of the patient must be carefully studied. If hygienic and salutary, it may warrant interference; if otherwise, and added to it the physical status is not good, the operator will carefully weight all the reasons pro and con, before determining. Too often there is lack of endeavor to build up the general health of the patient, as after-results prove.

4. Too many operators (may be specialists from the date of graduation) having little or no knowledge of general medicine, or skill as diagnosticians, fall into grievous difficulties. In this category are the men who operate for appendicitis in typhoid fever, for supposed intestinal obstruction in fecal impaction, and confound cholecystitis for cholelithiasis. They lack the discriminating power which is the outcome of years of observation and experience, which fits them for their responsibilities.

5. The emotional nature cannot be ignored. The influence of hope and fear, the most powerful motives in the human heart, must be reckoned with. In every-day life, these emotions make alive or kill. No less potential are they in the domain of surgical experience—not in every individual case—but in those borderline cases in which the minute—as well as the larger factors of success or failure enter—must be thought out and balanced in the final estimates. In desperate straits the operator goes to his task with courage when the patient is courageous, or in trepidation when the patient is demoralized. Here is the domain for the tactful operator. Experience has taught me a little—would that it had been more. The entire confidence of the patient must be had if attainable. It is not enough that she has sought your advice. It may be easy to convince the patient of her condition, and the need of operation, but that is not enough. You are told she would have it done, except for the want of courage. Tell her not to wait for that. If you commanded her confidence sufficient to seek your advice, tell her to take one step farther, trust you for the results. Stop worrying, and it will be a surprise how often a suggestion will be accepted, and the confidence of the patient restored.

In proportion as you have suggestive power to influence such persons, and confirm their courage, count yourself not only wise, but fortunate. Not a few patients have found this reassuring

suggestiveness a precious shelter, which turns into a bulwark of safety. Never keep your patient in avoidable or needless suspense. It may prove a dangerous experiment. We all appreciate the baleful influence of fear as shown in its demoralizing influence. It is a safe rule to delay in informing an apprehensive timid patient, until the time for the operation is just at hand. The dread or anxiety attending the outcome of an operation should be as far as possible eliminated. A sleepless night in grave conditions might change the outcome of the operation. Operate on those cases early in the morning, when the patient's power of resistance is at its best. It is not suggested, neither is it to be implied, that the inspiration of hope changes the gravity of the situation *per se*, but that it is possible in these border-land cases, in which we are forced to ponder well the question whether the patient "shall bear the ills she has or fly to others she knows not of," in the belief strengthened by experience that the determined hope and optimistic spirit has marked the difference between failure and success.

6. The evil of procrastination on the part of the operator when the plainest evidence demands immediate operation is not only a matter of profound regret, but, unfortunately, it is open to severe criticism. The sins of omission, in not operating in spite of the plainest indications, and that of commission, in operating for supposed conditions not present, which was previously referred to, cover a multitude of professional sins, the influence of which reacts upon the public mind, lowering their confidence in professional skill and judgment. Too many surgeons follow a rule of Aaron Burr, viz., "Never do to-day what you can put off until tomorrow, for when tomorrow comes it may not be necessary to do it." In numberless instances it makes impossible doing to-day what *should* have been done yesterday.

In scanning the horoscope of your patient, look not for the present alone, but for the future. Ponder well if operation is a matter of choice or necessity, and from this vantage ground determine your policy. Unless time is the most important factor, never operate until the patient is placed in the *best possible condition*, physically and mentally for the ordeal. It may be a problem of days, months or years, to put her in such condition, but take your time. Let sound judgment and duty as well as expediency have their legitimate sway.

7. Anesthesia. The well recognized rules regarding the selection of an anesthetic in a given case is too well known to require

more than passing notice. Save in obstetric practice, the greater safety of ether is usually recognized. That ether may be advantageously modified by nitrous oxide gas is well established. But it is of superlative importance that there should be skill in its administration. In too many hospitals the administration is left to last appointed interne, without reference to his knowledge or capacity. To know how to give an anesthetic, and no more than is required, is indeed a high attainment. The evenness of its administration, so that physical quiet ensues without excitement or depression, is of the first importance to the patient and operator. There are masters of this art—names I might mention—whose part in the operation is only second to that of the operator himself. The freedom from struggle, the absence of hypernarcosis and undue lividity, the normal color of escaping blood, the general composure of the patient, relieves the operator from solicitude, and enables him to concentrate his efforts to a single end. It is amazing how little some practitioners of much observation appreciate the toxic influence of anesthesia, and the shock it induces. It is a matter of surprise how much ether some anesthetists will give in an operation, and how little others will use in the same period of time. One will empty several cans of ether, another fewer ounces. Comment is unnecessary as to the advantages of the latter. No rule will apply to every case. Skill and experience must decide. If the mortality arising from avoidable toxicity of anesthesia and prolonged shock was known and eliminated, there would result a diminished mortality for causes not well understood and erroneously recorded.

The responsibility too often rests farther back, a deficiency in teaching in the schools. If not yet already come, the time is near when proper preparation of the anesthetist must and will command the hearty co-operation of all medical colleges and teaching faculties. Not to do it, will expose the faculty to just censure. Usually the greater the skill of the anesthetist, the shorter the period required for surgical procedure. A truly skilled anesthetist rarely requires more than four or five minutes, for the production of full anesthesia.

No matter who the operator or where his work is done, those intrusted to the administration of the anesthetic should be the best, and not those least qualified for so important work.

Greater appreciation of these truths are bearing fruit in this great metropolitan center. Within the area of Greater New York are a corps of expert anesthetists—some who devote themselves

exclusively to this work, whose presence in the operating-room relieves the operator from a distracting obligation, and facilitates that concentration of thought, so needful to rapid and thorough work not only, but contributes in large degree to the success of the operation. The time is not far distant when this subject will seek and receive the attention it demands.

8. The time taken for an operation, and the preparation for it, is the greatest moment. The period required by so-called good operators varies, and so does their goodness. One man will take sixty minutes to perform an operation, which another will do equally well in twenty to thirty. So far as skill and exactness in technic are concerned, they may be on a perfect equality—what about the patient's chances? The occasional operator whose patient usually survive the operation is satisfied if no catastrophe happens, and goes home justified, no matter if his operation is measured by half an hour or a multiple of it. Some man will come along with the statement that in robust patients in minor or even major operations, the time element is not important, but will his mental attitude enable him to discover the dangerous factors which affect the circulation, the respiration, the complicated functions of the nervous system in patients less robust or whose resistance is of a subnormal character? This state of mind is in itself a handicap to its possessor and a menace to his patient. If he knows it not, his misfortune is great, not so great as those who have surrendered to him their confidence, perhaps their safety. If the specific inquiry is made, how much time an operation should take, this would be my answer; no longer than is needful for its accomplishment consistent with thoroughness. This contemplates the most rapid work possible. It assumes that the preparation of the patient is attended to in advance, and the toilet of the operator assistants quite completed. It implies that all instruments and accessories, which emergency might require, are in a state of readiness, so there shall not be a moment of delay when the anesthetist is ready.

Just here, too often, is the loophole for culpable delay, not a deliberate purpose to minimize the chances of the patient, but lack of keen sense of obligation, to leave nothing undone which shall detract from the success of the operation. A few weeks since in one of our metropolitan hospitals, a surgeon of ability, with a large following, when urged to hasten the operation by the physician who had furnished the case, declared there was no reason for haste, etc., was told in plain terms he would never

send the operator another case, and would advise his friends accordingly.

It is time the dilatory operator mended his ways—failing to do so, he will find, some day, he has unwittingly impaired the confidence his professional brethren had reposed in him, which the public is often quick to discern.

A REVIEW OF THE HISTORY OF THE IODINE METHODS OF SKIN STERILIZATION.

WITH REMARKS ON THE TECHNIC OF ITS USE.

BY

JOHN EGERTON CANNADAY, M. D.,

Surgeon to Charleston General and McMillan Hospitals, Charleston, West Virginia.

SHORTLY after the appearance of Senn's article on "Iodine in Surgery, Gynecology and Obstetrics," I was impressed with the great advantage of iodine as a comparatively non-toxic antiseptic agent and began using an iodine solution in the preparation of the skin for operation. I also used it for the hands in such cases in which gloves were not worn. The results were eminently satisfactory in a large number of cases and I called attention to the use of iodine for this purpose in an article published in the *Journal of the American Medical Association*, April 14, 1906. This article was entitled, "Some of the Uses of Iodine in Surgical Practice." I quote from it as follows: "I have found the tincture of iodine to be a simple, readily obtainable and effective agent for the preparation of a small patch of skin preliminary to the insertion of the needle of the hypodermic or of the antitoxin syringe. For a year past I have been using a 0.5 of 1 per cent. iodine solution for purposes of hand disinfection in all cases in which rubber gloves were not worn. As a routine practice I wear gloves in operative work. In a certain class of cases gloves are undesirable. Again, a glove may be punctured or torn in a septic case, and the surgeon will feel the need of a reliable antiseptic, both for the protection of himself and his future patients. The use of this solution is simple and time-saving. The technic I practice is as follows: Thorough scrubbing with nail brush, green soap and running hot water. Cleanse the hands in a systematic manner. Take each part in a certain order every time, so as not to skip any part. Pay particular attention to the nail folds, subungual spaces and the skin between the fingers. Clean under short-clipped nails with a heavy metal nail file. Scrub again,

wash off soap in running hot water, remove residue of soap by immersion in 70 per cent. alcohol. Immerse in iodine solution for five minutes, rinse in sterile water or let the solution dry on the hands. The light brown stain can be removed by washing in diluted ammonia water after the operation is over, or if left alone will soon disappear.

In the preparation of the site of incision I invariably observe the following routine: The evening prior to operation the area is covered by a green soap poultice, which is allowed to remain for several hours to loosen the dead and scaling epithelium; the part is shaved, going wide of any possible incision, then carefully cleansed by the use of a soft nail brush or gauze pad, liquid antiseptic soap and sterile water followed by alcohol. After this a compress wet with 1–5000 bichloride is applied, covered with oiled silk or other protective and secured by a bandage. This is undisturbed until the next day after the patient is under the anesthetic, when the compress is removed and the part is treated to a second cleansing with antiseptic soap, gauze pad and sterile water, followed by diluted alcohol; the solution of iodine is then applied and allowed to dry on the skin. Naturally in emergency cases much of the treatment preliminary to the use of the iodine solution will have to be omitted.

The solution of iodine used for the hands may be made up with dilute alcohol or prepared according to the following formula: Iodine 2.5 gm., potassium or sodium iodide 5.5 gm., water 250 c.c. This gives a 1–1000 solution, which can readily be diluted to the desired strength. In a long series of cases in which the iodine solution has been used as described, the results from a clinical point of view have been excellent, and it is easy to conclude that as a chemical agent for at least the partial sterilization of the skin iodine is the most satisfactory substance we possess.

It must not be forgotten that this, the most harmless of antiseptics and its compound iodoform are active agents, and as such should be used carefully. Under certain conditions they are very toxic. The pyogenic membrane lining an abscess cavity seems to be practically immune. Patients suffering from septic infection will tolerate more than the usual amounts administered. The feeble and aged are often susceptible. Iodoform irritation on the exterior of the body usually takes the shape of a severe dermatitis, not any worse, however, in character than that occasionally produced by the use of a bichlorid, compress on a sensitive skin.

My conclusions are that iodine is the antiseptic par excellence for the skin of the hands and operation site. The solution of iodine is easily prepared and is stable. It does not coagulate albumin or form inert compounds with the tissues. It is of more value in many ways than either carbolic acid or bichlorid of mercury and not nearly so poisonous.

Later, I wrote a paper entitled "Aseptic Operative Technic," for the Hot Springs Meeting of the Mississippi Valley Medical Association, held November 8, 1906. This article was published in the therapeutic Gazette, May 15, 1907. From it I quote the following: Prior to major operative procedure of any sort I prefer to give the patient a few days at least of preliminary treatment, including a carefully regulated diet, purgatives, and rest in bed. The intestinal tract is in a measure freed of excretory products, intestinal indigestion with its putrefactive and gas-forming concomitants is temporarily held in abeyance and the individual who may be accustomed to the most active habits becomes habituated to life abed. As the eliminative power of the skin when in a normal state of efficiency is great, considerable attention should be given daily for several days, a clean suit of underclothing being put on after each bath. Eczematous conditions of the skin as a rule should be a bar to light or liquid diet the day before operation, no food of any sort the day of the operation unless the patient's vitality is below par, when some form of liquid nourishment is administered to within two or three hours of the anesthetic time. All other factors being equal, the smallest amount of food and feces we have in the gastrointestinal tract at this time the better for the patient. As I usually begin operating about 2:30 P. M., the patient has by that time had ample opportunity to get results from the routine of fasting and the administration of purgatives.

The evening of the day before operation a soap poultice is applied to the operation site and vicinity; this remains for two or three hours, when the part is carefully shaved, then washed with liquid antiseptic soap and warm water, followed by alcohol to remove the residue of soap. During the cleansing process care is taken not to produce abrasions, a soft brush or preferably a gauze pad being used to scrub the skin. In this preliminary skin cleansing a careful aseptic technic should be maintained. A sterile gauze dressing is applied and retained in place by a bandage. As containers for the solutions used in cleansing the skin site; glass flasks of appropriate size having well-fitting rub-

ber stoppers with bent glass tubing are used. This insures a small, steady stream that can be stopped or started at the right time and directed to the desired spot.

A purgative of some sort is given the evening of the preparation and a saline early the next morning. This is followed in two hours by a soap-suds enema if necessary, and later by saline enemas until they return clear. The bichloride compress is not used for the reason that it macerates the epithelium and diminishes the regenerative powers of the skin. The dry dressing is as a rule undisturbed until after the anesthetic has been started, when the final cleansing of the skin is done. Precisely the same technic is observed as in the preliminary cleansing with the addition of a 1 per cent. solution of iodine, which follows the alcohol and is allowed to dry on the skin. The patient is covered by a sterile fenestrated sheet; the operation area is outlined by sterile towels and loosely covered until the operation is begun. It is an easy matter to overdo in our attempts at asepsis. Overzealous scrubbing, too much energy expended in this direction, will defeat the end aimed at. Naturally in emergency cases the preliminary cleansing will have to be omitted. The solution of iodine may be made up with dilute alcohol or in accordance with the appended formula: Iodine, 2.5 gm.; potassium or sodium iodide, 5.5 gm.; water, 250 c.c. This gives a 1–100 solution, which can readily be diluted to any desired strength by the addition of water.

Granted that the attainment of absolute asepsis of the skin is about as impossible as squaring the circle, it yet behooves us to try to reduce the bacteria to the smallest possible number to each square inch of surface. In the preparation of the operation site one needs to have an intelligent appreciation of the possibilities of skin affection and the consequences of the same. As the complete sterilization of the skin with our present crudeness and limitations of science is a futile impossibility, we have to make the best use of the opportunities at hand. The value of the iodine solution as a germicidal agent for streptococci and staphylococci has been bacteriologically proven beyond a doubt; clinically this method has been productive of the happiest sort of results, and it is easy to conclude that as a chemical agent for at least the partial sterilization of the skin iodines is the most satisfactory substance we at present possess.

For purposes of mere mechanical cleansing of many of the mucous membranes of the body prior to operation I have the

parts copiously flushed with physiologic saline solution. Urinary antiseptics are used to improve the sanitary condition of the vagina and uterus. The cleansing of the vagina is a subject often neglected; a careless sort of douche is given, and the part is said to be clean. Every part of the vaginal wall should be carefully cleansed with liquid antiseptic soap, hot water, and a thorough scrubbing with a gauze pad. Especial attention should be paid to the space just behind the cervix, where discharges are prone to accumulate and entirely escape the average douche. Alcohol causes too much burning for use on the mucous membrane even of the vagina. The soap should be removed by free use of warm water; thereafter, the dilute iodine solution should follow.

In conclusion, I said that bichloride of mercury as ordinarily employed is useless and engenders a false sense of security.

That the bugaboos of prolonged scrubbing of hands and arms with rough brushes and the reckless use of strong bichloride solutions favor rather than diminish the chances of infection in the long run.

That the iodine solution is comparatively nontoxic and highly antiseptic. Laboratory experiments have conclusively proved that as a germicide a 1–500 solution of iodine will do in five minutes what it takes a 1–1000 solution of bichloric half an hour to accomplish.

In November, 1906, I published a paper in *American Medicine*, entitled, "Iodine and Some of its Uses in Surgical Work." I quote in part: Roux first made use of tincture of iodine in hand disinfection, using it for the finger-tips to penetrate the subungual spaces and the nail folds. von Mikulicz used it in the same way and Senn uses it for that purpose, introducing it around these crevices with a nail brush. For several months past I have used a one-half of 1 per cent. alcohol solution for purposes of hand disinfection preliminary to operative work in all cases in which rubber gloves were not worn. The same solution is made use of in the preparation of the site of the operation incision. I wear rubber gloves as a routine measure in operative work but in a certain number of these cases gloves are undesirable, again in an occasional septic case, a glove may be punctured or torn and the operator feels the need of some reliable antiseptic for his own sake as well as for the protection of his future patients. The use of this solution simplifies the technic and saves time. First thorough scrubbing with nail brush, green soap, and running hot

water, going over the hands in a systematic and methodic manner, taking each part in its turn, and always following the same order so as to skip no part. I pay particular attention to the nail folds, subungual spaces, and the skin between the fingers. Short clipped nails should be cleaned with a good heavy metal nail file, the hands scrubbed again, washing off the soap in running hot water. Remove the residue of the soap with 70 per cent. solution of alcohol, immerse in iodine solution for five minutes, rinse in sterile water. The light brown stain can be removed by washing in dilute ammonia water after operations, or if left alone it will soon disappear.

The results clinically of this method have been superb. In a long series of cases no infection attributed to the hands has occurred.

In conclusion I would say that iodine constitutes a near approach to a perfect antiseptic in that it is nontoxic in effective strength, being one-fourth as poisonous as mercuric chloride though many times more valuable as a germicide. It does not coagulate albumin or form inert compounds with the tissues. It possesses great penetrating powers, is easily prepared, and is stable.

A solution of iodine is the most practical chemical agent we have for the sterilization of the skin. In a paper entitled the "Conservative Surgery of Arms and Legs," published in the *Journal of the American Medical Association*, May 11, 1909, by myself, I said: "Scrub from, not toward the wound, be careful not to allow soap, water or other solutions to run into the wound while the limb is being cleansed. Turpentine, gasoline, benzine or soap and water followed by alcohol or ether are all effective and their varying use is only a matter of choice. Lastly I apply to the limb 0.5 per cent. iodine solution. I irrigate the wound thoroughly with hot hormal salt solution."

I have discontinued the use of peroxide of hydrogen and have never used a bichloride of mercury solution in the irrigation of wounds. I am satisfied that both promote rather than decrease wound secretion. Warm normal salt solution is a good mechanical cleanser and is nonirritating to the tissues. A weak solution of iodine is possessed of a maximum bactericidal power combined with a minimum toxic and irritant effect. It not only has a destructive effect on pus germs, but to a great extent will seal the ends of the lymphatic and blood-vessels against the absorption of septic material."

In the fall of 1907 I visited Munich and at the clinic of Doederlein, who succeeded von Winckel, I saw that iodine was being used. I mentioned it in my letters to the *West Virginia Medical Journal.* These letters were published in installments and this part was not published in the journal until June, 1908. I quote in part: In the preparation before the operation, full strength tincture of iodine on the skin a short time previous to incision. This is followed by a semi-liquid mixture containing rubber, carefully spread on the skin by means of a roller after which a small electrically driven fan is held near to facilitate drying.

So far as I know I was the first to make use of iodine solution as a routine in the preparation of the operation site, having used it continuously since early in the year 1905. At first I followed soap, water and alcohol with bichloride. Either the skin was cleansed thoroughly the evening before operation, with soap and hot water, gauze and sponge, then again alcohol, then a dry dressing was applied. After the anesthetic was begun, the skin was gone over with pure grain alcohol, and followed by the iodine solution. I had charge of a large charity clinic at the Sheltering Arms Hospital and made use of iodine in all my cases.

Last year I began a fractional method by giving the skin several successsive paintings when dry with iodine solution.

As chairman of a committee appointed for the purpose of securing uniformity in the operating room technic of the Charleston General Hospital, I compiled a series of rules for the operating nurses, and these were published in the *West Virginia Medical Journal,* January, 1911. To summarize part of these rules, I will say that physical cleanliness of the part proposed for surgical attack, is secured by the plentiful use of razor, soap, gauze or cotton sponge, hot sterile water followed by alcohol. Afterward the iodine solution is applied, as soon as the skin is dry. Early next morning the skin is repainted and after the anesthetic is begun there is a final painting of the skin with iodine solution. We have been using a 10 per cent. solution of the tincture in alcohol in elective cases. In emergency where only one application can be made, the full strength tincture is used. I have infrequently seen a fine vesicular eruption of the skin follow the use of iodine as a disinfectant.

SIGNIFICANCE OF DELAYED OPERATION IN TREATMENT OF ECTOPIC GESTATION.

BY

EMERY MARVEL, M. D.,

Atlantic City, N. J.

HEMORRHAGE and sepsis are the Cardinal dangers of Ectopic gestation. Sepsis is never a primary trouble. Its activity is engrafted upon a pre-existing hemorrhage, which is the result of a ruptured gestation sac. Sepsis is secondary, hemorrhage primary. In order safely to combat them, it is necessary to remove the underlying cause. To prevent sepsis is to prevent hemorrhage. In order that no hemorrhage shall exist, it is necessary to remove the gestation sac before rupture. When hemorrhage is evident, the only dependable means to secure control is to ligate the vessel approximate to the bleeding orifice. That sepsis with the complications which it produces may be avoided removal of the bacterially fertile blood clot and the gestation debris is imperative. When infection is engrafted upon the hemorrhagic remains the septic material must be removed and means established for the further drainage of the products resulting from the septic process. The treatment of ectopic gestation therefore, is essentially surgical.

SELECTION OF TIME FOR OPERATION.

In the treatment of any disease the cure of which is dependable upon surgical action, the prudently selected time of action must be based on individual experience; the influence of apparently logical arguments of others; or the feasible demonstrations offered by co-workers. When to operate for the removal of an unruptured extrauterine pregnancy the diagnosis of which has been fully established, seems a well-settled question. The removal of an unruptured sac in itself is so simple; the risk to maternal life so slight; the certainty of protection against subsequent serious dangers which the gestation process threatens is so reassuring, there is no justification for an opinion dissenting from prompt surgical intervention. Most frequently, however,

rupture has already taken place before a recognition of the trouble is established. Consequently it is the condition at the time bleeding is active from the rupture, or the condition resulting from the hemorrhage, with which the surgeon has to deal. To immediately operate or to delay operation at this stage, invites consideration in which there is some difference of opinion. "There can be no doubt that an immediate abdominal section is the only proper thing to do—" was the dictum expressed by an eminent member of this association at a regular meeting as long ago as 1888. In this opinion the members evidently concurred. This teaching has gone forth and has widely influenced action for the saving of women unfortunate in being afflicted with this malady. This dictum was supported by the apparently logical conviction that a bleeding vessel required ligation, that the earlier the ligation be done the less would be the jeopardy from loss of blood. Even at that date when aseptic surgery was not established, the practice of immediately operating was convincingly judicious in the minds of those studying the greater safety for ectopic victims. It is difficult to comprehend that with the additional advantages gained for surgery by the subsequent perfection of aseptic technic, immediate operation for this cause should be less in favor.

More recently, however, advocates of delayed operation have been in evidence. That hemorrhage from a ruptured ectopic gestation is self checking is by these gentlemen assumed. This assumption is based upon what purports to be analogous study of self-limiting hemorrhage occurring in other parts of the body, together with evidence deduced from experimental investigation upon the dog. It is opinioned that it is not hemorrhage, but the shock that threatens calamity; that the phenomena of shock is a cause unto itself and not necessarily a result of the bleeding. By these deductions it is argued that it is wiser and safer to wait until recovery from shock has taken place, rather than to add additional shock by surgical trauma in operating to control the bleeding. It is inferentially assumed that by delaying operation life would not be jeopardized, but conserved; that the operation will be with less risk to life, and secure an easier convalescence. If reasons encourage these contentions, if experience support their assumed merit, and if observation of facts convinces us that these contentions are sound, then they deserve our adherence. My convictions are that these contentions are dangerous—dangerous not only insomuch that they may influence the sur-

geon, but more so in that the general practitioner, by whom ectopic sufferers are first observed, is encouraged by such teaching to be less careful of diagnosis and to procrastinate action beyond safety.

Although one's experience may be limited, experience is the medium through which comes his strongest convictions. The following series of cases influence me:

BRIEF ANALYSIS OF CASES.

That hemorrhage from a ruptured ectopic gestation endangers life was fixedly impressed upon my mind by the first case that I observed and it illustrates the fallacy that the hemorrhage can be depended upon to check itself. Sudden pain seized the victim while at church. She was carried at once to her home a half block away, where I saw her in my brother's stead within thirty minutes from time of initial pain. She had a rapid pulse; possessed pallor of features, and suffered intense pain in the abdomen. I did not make a proper diagnosis. To secure quiet and ease was the object aimed at. Morphia was given and recumbent rest enforced. My brother directed the subsequent care of the case which consisted of absolute recumbent rest, functional quiet secured by repeatedly giving morphia, and the required stimulation. The unfortunate woman grew progressively worse, exhibiting air hunger with other evidences of hemorrhage, and perished thirty hours after her initial symptom. The post-mortem revealed the lower abdomen full of clotted blood, ruptured right Fallopian tube, and a six to eight weeks fetus surrounded by the clotted blood.

Six cases reported in second division of this series were in an alarming condition when I first saw them. Two of which (cases 21 and 24) had not rallied from the primary shock and I operated upon them ten and eight hours respectively after rupture; at which time instead of their condition having grown better, in each it was continually becoming worse. Four cases (4, 7, 17 and 19) were operated on when in extremely bad condition. Each of these had one or more recurrent hemorrhages; the first attack not having alarmed the attending physician. The primary summons for care preceded operation in each of this group from two and a half to five days. The seriously alarming recurrence in each preceded operation by from two to five hours. When operation was performed each of these cases was experiencing shock. Although these cases were not operated upon

Case	Time elapse after first hemorrhage until operation	Physician	Recurrent	Condition previous	Condition subsequent	Operation	
			FIRST DIVISION.—ONE CASE.				
1	36 hr.	P. M.	Continued.	Primarily bad	Increasingly worse	None	Death.
			SECOND DIVISION.—SIX CASES.				
2	2½ days 2 hours	A. W. B.	3	Primary not bad	Each recurrent worse	Extremely bad	Cured.
7	3 days 3 hours	M. S. L.	3	Primary not bad	Each recurrent worse	Extremely bad	Cured.
17	5 days 5 hours	E. H.	3	Primary very slight	Each recurrent worse	Extremely bad	Cured.
19	3 days 3 hours	E. G.	2	Primary very slight	Each recurrent worse	Bad	Cured.
21	10 hours	J. A. J.	Continued.	Primary not bad	Continually worse	Very bad	Cured.
24	8 hours	E. G.	Continued	Distinct	Continually worse	Extremely bad	Cured.
			THIRD DIVISION.—SIXTEEN CASES.				
2	3 weeks	P. M.	3 or 4	Slight	Intermittingly worse	Worse at any time	Cured.
3	2 weeks	S.	1	Slight	Intermittingly worse	Worse at any time	Cured.
5	2 weeks	W. R.	5	Distinct	Continually intermittingly worse.	Worse at any time	Cured.
6	3 weeks	E. S.	2 or 3	Distinct	Continually intermittingly worse.	Worse at any time	Cured.
8	3 weeks	D. B.	2	Very slight	Continually intermittingly worse.	Worse at any time	Cured.
9	2 weeks	E. C.	2	Very slight	Continually intermittingly worse.	Worse at any time	Cured.
10	2½ weeks	W. B. S.	2	Very slight	Continually intermittingly worse.	Worse at any time	Cured.
11	4 weeks	D. E. Y.	3	Very slight	Continually intermittingly worse.	Worse at any time	Cured.
12	10 days	W. P. C.	2	Very slight	Continually intermittingly worse.	Worse at any time	Cured.
13	2 weeks	A. B. S.	3	Very slight	Continually intermittingly worse.	Worse at any time	Cured.
14	3 weeks	J. A. J.	2	Very slight	Continually intermittingly worse.	Worse at any time	Cured.
15	2 weeks	E. T.	2	Very slight	Continually intermittingly worse.	Worse at any time	Cured.
18	2 weeks	E. H.	2	Distinct	Continually intermittingly worse.	Worse at any time	Cured.
20	2 weeks	W. B. S.	2	Slight	Continually intermittingly worse.	Worse at any time	Cured.
22	2 weeks	P. M.	2	Slight	Continually intermittingly worse.	Worse at any time	Cured.
23	10 days	S. B.	2	Distinct	Continually intermittingly worse.	Worse at any time	Cured.
16	9 months, 6 weeks fetus. Full termed dead child.	J. A. J.	None	Very slight (no doctor).	No trouble till term labor pain. Recurrent severe labor pain.	Extremely bad	Death.

at time of primary hemorrhage, the condition occasioned by recurrent bleeding places them in the same category as if the alarming condition was primary. This difference I wish to emphasize, however, that had surgery been applied in the primary hemorrhage when lesser bleeding and depression were present it is fair to assume the alarming recurrent condition would not have occurred. I view this group as having received immediate operation since each was operated upon as soon as active arrangements could be made for the operation subsequent to the initial alarming symptoms. At least they present all the difficulties which the severer cases of primary rupture possess. The observation of them, therefore, serves a stronger argument to favor immediate operation. Each recovered.

The next division of the series consists of sixteen cases (2, 3, 5, 6, 8, 9, 10, 11, 12, 13, 14, 15, 18, 20, 22, 23) classed as being treated by remote operation. The time which operation was performed subsequent to rupture, varied from two to six weeks. It had not been deliberately selected at time of rupture. The patients had all been treated with enforced body rest and with as much functional rest as could reasonably be given. These cases had all been treated for peritonitis—a treatment similar to, if not identical with the method advocated for the cure of ectopic rupture by those recommending remote operation. All of these cases recovered. The recovery, however, was subsequent to a more difficult operation, fraught with adhesions, visceral distortion, and often with inflammation.

One single case (16) is grouped alone and is doubtful of deserving a place in this series. The only excuse for its being included is due to the pregnancy being extrauterine origin. The fetus attained full growth, then perished and was retained within the abdominal cavity six weeks beyond maturity. Futile efforts were directed by the attending physician to gain expulsion via vagina. The directions were given without appreciating the child's extrauterine position. I removed by laporotomy the dead and macerated child from an already exhausted woman. Death ensued. No doubt is entertained by me that had this conception been removed at the time of rupture, the woman's life would have been conserved, nor would the birth rate have been decreased. So rare, indeed, is it possible to secure a living child, the product of an extrauterine gestation, that the hazard imposed upon maternal life justifies the condemnation of such effort in the light of present-day efficiency.

HEMORRHAGE FROM ECTOPIC RUPTURE IS DANGEROUS.

Hemorrhage from a ruptured ectopic sac is capable of fatal issue; has in the past induced death, and will, if uncontrolled fill future premature graves. Hemorrhage may check itself, but being checked it has no guarantee of control, in truth not only predisposes to recurrence, but promises a more aggravated form. There is but one sure and dependable control of a bleeding vessel. That control comes through the gateway of surgery. The needs are positive and definite. Its immediate application should not be delayed, unless by delay there is gained diminished danger that balances in favor of postponed action. What justifies procrastinating in the fulness of increasing danger and aggravating hazards?

SHOCK DOES NOT CONTRAINDICATE OPERATION.

Whether or not the shock associated with the rupture is an entity unto itself; or is precipitated by other causes than bleeding; or is occasioned solely by the hemorrhage, of this I am convinced: That the hemorrhage exerts positive influence upon the initiation of shock and proportions the severity of its manifestation. If this be true, it is evident that early positive control of bleeding opposes progressive shock depression. With the present definite assurance that shock can be remedied by vasomotor stimulation and by the introduction of compensating fluid contents into the blood-vessels, the horrors of adding operating aggravation to the existing shock are lessened. The benefits attained to overcome the shock by prompt operation overbalances the additional hazard the operation incurs; and rather weighs in favor of operation for the treatment of the shock arising from this cause.

CONSERVATION OF COMFORTS IS FAVORED BY EARLY ACTION.

The first object in the care of a diseased condition possessing dangerous proportions is to conserve life; then to conserve comforts; economize time of invalidism and promote return of health. Delayed operation prolongs the associated discomforts, not only by the additional time entailed in waiting for operation, but also necessitates a longer and more discomforting convalescence. The days, or weeks, waiting not only extends the time of suffering, but increases the intensity. To tolerate the presence of a blood clot in the peritoneal cavity is to invite inflammation

with all the associated pain and various discomforts of peritonitis. The removal of this inflammatory mass leaves the serous surface oozing, which condition predisposes to subsequent adhesions with all the discomforts such adhesions entail. The additional discomforts either in time, duration, or intensity are not justified by any corresponding benefits gained by such delay.

DELAYED OPERATION FAVORS PROLONGED INVALIDISM.

Prolonged invalidism is easily acquired by a passive subject; difficult of avoidance in one exhausted physically; and is almost unavoidable in a neurotic individual deprived of much blood with subsequent peritonitis. The tolerance of removing an unruptured ectopic sac has but little demand upon the patient. The prompt removal of a ruptured or aborted sac with little blood loss, occasions but slight additional drain; but a large hemorrhage followed by prolonged suffering, sacrificing physical, mental, and nervous resources incurs prolonged invalidism to partially pay the debt of procrastination. Prompt surgical application at least reduces the period of invalidism if it does not give full exemption therefrom.

EARLY OPERATION FAVORS PROMPT REGAIN OF HEALTH.

Possibility of, and time required for, regain of health depend principally upon amount of blood lost, damage to implicated organs and malevolent psychic impressions. An individual in otherwise good health is capable of compensating for the loss of a small amount of blood by supplying the lost quantity with but slight disadvantage. If the quantity lost be large, not only is the difficulty made greater measured by the greater amount required, but also by the handicaps of having deficiently nourished organs to functionate. The disadvantages are increased with almost geometrical proportions as the quantity of blood lost increases. The time required for the regain to health is practically proportionate to the amount of blood lost.

The blood collection becomes a foreign body possessing its adverse characteristics. Physically it displaces and contorts adjacent organs. As an irritant it promotes inflammatory action. By the displacement and distortion, derangement of function results. Inflammatory processes impair function and

effects to cripple normal organic action. Should infection engraft itself upon the blood collection, permanent invalidism is threatened. Repeated psychic shocks induced by repeated pains, frights, recurrent apprehension, discouragement from prompt and positive improvements induces neurosis. There is no doubt that such experience for the patient prolongs her invalidism and handicaps her regain of health.

Shock, hemorrhage, inflammation, discomforts, duration of invalidism and promise for complete return of health, begs full consideration in determining action for the care of those suffering from ectopic gestation. It is my conviction that delayed operation imposes unjustifiable penalties upon the patient. The significance of delayed operation is exhibited in:

Greater loss of blood.
Possible loss of life occasioned by hemorrhage.
Increased shock depression.
Recurrent hemorrhage producing worse condition than first.
Operation fraught with greater difficulties.
More extensive pathology.
Increased discomforts measured by time and intensity.
Crippled organs with deficient functions.
Protracted invalidism.

THE TREATMENT OF ECTOPIC PREGNANCY

WITH REPORT OF CASES, INCLUDING A CASE OF LITHOPEDION COMPLICATING UTERINE PREGNANCY.

BY

CHARLES A. STILLWAGEN, M. D.,

Pittsburgh, Pa.

FIRST aid to a victim, bleeding from a severed artery, say of the forearm, would be, according to all principals of surgery and of common sense, to check the hemorrhage. No delay is admissible. In the absence of proper facilities for doing a formal operation, the use of any make-shift which will accomplish the result, is good surgery. No physician, no matter how averse to doing surgical work, would stand idle while a consultant was being secured. He is face to face with an emergency.

It has been taught that terminated ectopic pregnancy parallels the condition described.

Four years ago, when I was preparing my first report of cases in which operation was deferred, I searched in vain for encouragement from the then prevalent teaching. There had been no instruction to the general practitioner as to any course of procedure pending the arrival of the surgeon. The dictum had gone forth to operate immediately. Naturally, the practitioner, no matter how distasteful the prospect, felt in conscience bound to do the best he could in the face of this dire condition. The number of lives thus sacrificed will never be known. The mortality rate of skilled surgeons was extremely high.

It was this teaching that aroused protest. In May, 1907, before the American Gynecological Society at Washington, Hunter Robb read a paper entitled "Ectopic Gestation with special reference to the Treatment of Tubal Rupture."

In May, 1907, a paper entitled "Deferred Operation in Ectopic Pregnancy" was read by F. F. Simpson before the American Gynecological Society.

The writer's paper "The Treatment of Ectopic Pregnancy" was read before the Penna. State Medical Society at Reading, September, 1907.

The experience of the essayists had been identical. They had observed no deaths from hemorrhage and operation deferred to a time of election had been practically without mortality. This served to emphasize what was already clinical history, namely, that the majority of terminated ectopics do not die immediately from hemorrhage and that the worst type of cases may recover. For every surgeon, every hospital interne knew that in the majority of instances these cases came to operation after sufficient time had elapsed for a continuous hemorrhage to have caused death—frequently days and weeks having passed since the initial symptoms. Many practitioners of experience could cite examples in which death seemed impending when either from a failure to make a proper diagnosis or the patient's refusal to submit, operation was deferred with advantage.

That practice and sentiment has undergone a change may be readily seen from the following, taken from the literature of the past four years.

"To say that every case of ruptured ectopic gestation should be operated upon at once is certainly taking an extreme view." (Blume.)

"An analysis of cases in which there was profound collapse from intra-peritoneal hemorrhage, but in which nothing in the history pointed to previous intra-peritoneal bleeding, shows that by far the greater majority rally from the bleeding sufficiently to come well out of the shock.

To operate upon a patient in profound collapse from a primary hemorrhage is, in my opinion, a mistake; because, with proper treatment, the patient may rally in the course of a few hours." (Boldt.)

"The circumstances and conditions should be well weighed before one decides to interfere." (August Martin.)

"So far, I have had no death following one of these operations, and as a rule, I would wish to be classed among the conservatives who prefer to wait rather than operate in a case of immediate collapse when I am satisfied that the collapse is due to hemorrhage." (Gordon.)

"There is no doubt as to the advisability of considering every case of ectopic pregnancy as surgical, but the question is debatable whether in this 5 per cent. operation should be done immediately during shock or deferred until shock has disappeared." (Bovee.)

"I confess myself to be on the side of those who would wait

in the case of a very dangerous condition, watching the patient most carefully before deciding to operate." (Gardner.)

"Some patients will die before surgical aid could reach them; others will die in spite of it, and some will die because of it; surgical interference having taken place too hurriedly, without proper preparation." (Krug.)

"Cases seen after rupture should likewise have operative treatment, if in suitable physical condition.

"If the patient can be operated on with good surroundings and is in condition that promises survival from operation, I prefer early operation, rather than run the risk of repeated hemorrhage." (Hunner.)

"I believe it will be better to give a little time for the patient to rally rather than rush upon the scene in the so-called "penknife operation" state of mind. I believe that more patients will be saved by the plan which gives time enough to secure a proper environment and such restoration of the vitality as may be required to withstand the additional operative shock. I believe I have saved lives from such a course that would have inevitably been lost, if I had immediately operated with the patient still in collapse." (Baer.)

Those practicing immediate operation claim:

1. That it is impossible to determine which particular case may continue to bleed or at what moment a secondary hemorrhage may occur, therefore, operate at once.

It is generally conceded that in the majority of terminated ectopic pregnancies operation may be safely deferred. It may likewise be admitted that operation may be done at once, in the same type of cases, with a comparatively low death rate, if performed by a competent surgeon, under the same conditions that he would require for other abdominal work. But I wish to particularly refer to the smaller number—those patients which present symptoms sufficiently grave, as to make them appear to many surgeons as poor operative risks.

In the light of our present knowledge, is the surgeon justified in taking a chance?

It is this class which has furnished a high operative mortality in the past. Surgeons who defer operation have had the experience that they almost invariably improve with appropriate treatment.

That many patients have died from ruptured ectopic pregnancy has never been denied. Some of my own cases have been

so near death that I could readily imagine that a little greater shock, a little more hemorrhage, a little less resistance would have been almost immediately fatal.

Recently I was called to a case, but the patient was dead before I saw her. She died within fifteen minutes after the first symptoms of collapse. Autopsy revealed a ruptured cornual pregnancy. Nothing save operation before rupture would have saved her. But of the cases which stop short of this immediately fatal issue, what percentage will die if operation be deferred and appropriate treatment instituted? It cannot be determined by the reports of cases such as the one to which I have just referred; it cannot be determined by the victims that reach the coroner who die with the condition undiagnosed and consequently untreated; it cannot be determined by fatalities following immediate operation or operations undertaken after a slight delay when the patient was still unfit for laparotomy; it cannot be determined by instances in which a wrong diagnosis is made and when naturally a wrong treatment is administered; it cannot be determined by cases diagnosed properly, but which are treated improperly. It can only be determined by a careful, accurate report of results by those who defer operation in those cases which are manifestly unfit for the ordeal.

How frequently will hemorrhage recur?

I believe not often if the patient be kept absolutely quiet. In none of my cases, in some of which operation was deferred longer than necessary, has this accident happened.

This is especially true of grave cases. In speaking of this type Bonifield says:

"The great loss of blood decidedly increases the coagulability of the blood stream favoring the formation of a firm clot. It will be days rather than hours before the blood stream approaches the normal, if it be not raised by injudicious stimulation; so there is little danger of the clot being forced out by the blood stream. Such a profuse hemorrhage is fatal to the ovum, so there is not likely to be another rupture."

The operator, then, who insists upon immediate operation in all cases, in order to justify his position must show an exceedingly low mortality rate; for it is not better than 20, 10, 5 or even 2 should die as a result of operation, rather than that one should perish without operation.

A second argument is, that delay causes an increased morbidity.

This should not weigh too heavily if temporizing is a life-

saving process. I am convinced, however, that a reasonable delay does not result in much morbidity. As I have said before, in some of my cases, operation was deferred longer than was really necessary, yet I am sure no operation was more extensive than it should have been if I had operated immediately after rupture. The only difference was, that I could take time to examine other structures and remove them, if necessary, without risk to the patient.

There have been no post operative complications in any of my cases. With reasonable delay, sepsis is not apt to occur if it does not already exist at the time of rupture. Bovee very truly says, that "the presence of a severe form of infection may overwhelm the patient after the most wisely and skilfully performed operation." Statistics show that a large percentage of deaths following immediate operation are due to sepsis. Cases in which there is a co-incident infection are to my mind safer if operation be deferred. Aside from the usual and ordinary dangers of immediate laparotomy, the necessary incompleteness of the operation and the low vitality of the patient render her a peculiarly easy prey to septic organisms.

In two cases already reported where I had reason to believe that an infection existed, each was treated as a pelvic peritonitis. Both patients were operated upon at a time of election with prompt recovery. A staphylococcic infection was demonstrated in one case.

A third argument offered is:

That immediate operation does away with all disadvantages of delay, and is not a dangerous procedure.

Elis Essen Möller says that "Immediate operation offers no more risks than later operation or than any other abdominal operation." This would be important and would stop all controversy if surgical history would bear out the statement. Most surgeons are prepared to admit that opening the abdomen of a patient profoundly shocked and anemic offers decidedly graver prospects than a simple appendectomy or a shortening of round ligaments.

As a matter of fact, many surgeons operating at once in all cases, Deaver, Harris, Ladinski, Vineberg and others, report a low operative death rate. Surgical advancement has made their results possible. But even if it were the rule for skilled operators in well appointed hospitals to show the very best results in immediate operation, it would still be a most dangerous impres-

sion to be abroad, that all cases of terminated ectopic pregnancy must be rushed pell mell to abdominal section. On the contrary, the internist who sees these cases first should be instructed as to what constitutes first aid, pending the arrival of the surgeon.

Absolute rest; external heat; morphia to secure quiet and combat shock; strychnine sulphate in small doses as a vaso-motor stimulant; physiologic salt solution slowly by rectum or subcutaneously—under no circumstances administer intravenously.

Upon the surgeon will lie the responsibility as to whether operation be undertaken at once or deferred. He should decide first whether or not the patient is a good operative risk. If not, active hemorrhage would be the only justification for immediate operation; to determine this, he should use every diagnostic means at his disposal and if in doubt should bear in mind the cold, clinical fact, that it is the exception to find the bleeding persistent. I wish to add the following cases to those already reported:

CASE I.—The Pittsburgh Hospital No. 8514. Admitted 9.00 P. M.

In the afternoon, patient has been seized with a sharp pain in abdomen. According to her physician, she was cold, pulseless and for a time unconscious. When admitted to hospital, a few hours later, her condition had materially improved, but was still grave. There was marked anemia and restlessness, temperature 99, pulse 108 and of poor quality, respiration 36.

Treatment.—Absolute rest; morphine sulph. grain 1/4, atropin grain 1/150; nothing by mouth; proctoclysis, normal salt solution Oi every six hours.

Condition the following day (morning): temperature 98.6; pulse 88; respiration 24. Blood count; hemolysis 45 per cent.; R. B. C. 1,890,000; W. B. C. 13,400.

Treatment.—Absolute rest; proctoclysis, continuous.

Diet.—Beef juice, egg albumen.

Improvement steady. Further treatment consisted in maintaining quietude and gradually increasing diet.

At operation, the fetus was found adherent to parietal peritoneum. An interstitial pregnancy was ruptured through the uterine wall and the tear was so extensive that it was decided to remove the body of the uterus. One ovary was left. Recovery without incident.

Condition upon admission to hospital: temperature 99; pulse

108 and of poor quality; respiration 36; marked anemia; hemolysis 45 per cent.; R. B. C. 1,890,000.

Condition at operation: temperature 98.4; pulse 80; respiration 20; blood count: hemolysis 80 per cent.; R. B. C. 3,400,000.

This case is interesting because it is of that type which is considered by some to be invariably, quickly fatal.

Now the technique of immediate operation is somewhat as follows: Open the abdomen quickly; grasp the injured tube and rapidly tie off the blood supply; remove as much of the clot as possible, without taking too much time for completeness; close the abdomen, etc., etc.

In this case, no matter when the operation had been performed, nothing less than hysterectomy would serve, and the surgeon attempting relief at a time when haste is the sine qua non would have found himself put out in his good intentions. I think it may be conceded that in this particular instance, the patient's chances were improved by delay.

CASE II.—Pittsburgh Hospital No. 7123. Admitted to hospital in good general condition. Some hours later, I was called hurriedly. I was in the hospital at the time, but had not yet visited the ward. The nurse explained that the patient had just had some sudden severe attack. I found her cold, pulseless, pale and gasping. She was unable to speak, except some incoherent words. But the picture was one of ruptured ectopic pregnancy.

Treatment.—Morphine sulphide grain 1/4; atropin grain 1/150; external heat; absolute rest.

She gradually reacted. First recorded temperature and pulse 96.4 and 140 respectively.

Normal salt solution Oi per rectum every six hours.

The following day temperature 98; pulse 120; blood count: hemolysis 55 per cent.; R. B. C. 2,600,000.

Improvement steady. At operation temperature and pulse normal. Blood count: hemolysis 78 per cent.; R. B. C. 3,496,000.

In this case the shock was so profound that I feel sure any operative procedure whatever, at the time I first saw her, would have proven fatal. After twenty-four hours, it would still have been hazardous, but later she became a most excellent operative risk.

CASE III.—Pittsburgh Hospital No. 7883.

Operated upon as soon after rupture as preparations could

be made. Patient was anemic, but there was little shock, pulse 100 and of fair column.

At operation there was a large amount of blood in the abdomen. Right tube, ruptured about one-half inch from the uterus, was removed. Recovery.

In this case, hemoglobin taken immediately after operation, showed 70 per cent. The following day it showed 55 per cent. Indicating, as pointed out by Crile that the hemoglobin percentage does not fall immediately after hemorrhage.

CASE IV.—Columbia Hospital No. 4115.

Operated upon within an hour after tubal abortion Her chief symptoms were a missed menstrual period, uterine bleeding and a sudden sharp pain in abdomen. There was little shock and no apparent anemia. At operation, there was found only a moderate amount of blood. The left tube was removed. Recovery.

It will be observed that Cases III and IV were operated upon as soon as possible after the termination of the pregnancy. Both cases were in suitable condition and immediate operation offers the advantage that the patient is spared a double period of convalescence. This fact, however, should have no weight at the expense of additional risk to the patient's life.

CASE V.—Pittsburgh Hospital No. 8528.

Patient came to my office and gave this history: Her past period was delayed ten days, slight uterine bleeding had persisted for the past three weeks. She complained of some pelvic pain.

Examination made very gently revealed a small mass in the right tube. A diagnosis of unruptured ectopic pregnancy was made and she went to the hospital direct from my office. An unruptured pregnant tube was removed at operation. Prompt recovery.

If there be any point in surgery upon which all surgeons agree, it is the necessity for immediate operation in unruptured ectopic pregnancy. Fortunately, the diagnosis is made much more frequently now, than in the past. The condition presents definite and constant symptoms and if our teachers and textbooks would picture it as vividly as they do the collapse following rupture, we might look forward to the time when early operation would be the rule and there could be no difference of opinion, as to what to do with the patient once the diagnosis was made.

CASE VI.—Pittsburgh Hospital No. 7146. Referred to me

three weeks after the beginning of her illness. She gave the usual history of ruptured ectopic pregnancy. At operation, ruptured left tube, encapsulated blood clot and right tube removed. Recovery.

CASE VII.—Pittsburgh Hospital No. 7491. Referred to me one week after beginning of illness. Patient in good general condition. Gave the usual history of ruptured ectopic pregnancy. Pelvic mass easily palpable. At operation, a left tubal abortion was demonstrated. Encapsulated blood clot and left tube removed. Recovery.

CASE VIII.—Pittsburgh Hospital No. 7684. Patient gave typical history of ruptured ectopic pregnancy occurring some days before admission to hospital. She had been in good health. Her last period had been delayed and had persisted abnormally. She was finally seized with a severe pain in abdomen causing her to faint.

Upon admission to hospital: temperature 98.6; pulse 90; blood count, hemoglobin 48 per cent.; R. B. C. 3,296,000; W. B. C. 12,400.

A distinct mass in left side of pelvis. Operation refused. She remained in hospital three weeks and left in normal condition except for the pelvic mass which was considerably reduced in size.

CASE IX.—Columbia Hospital No. 2610. Admitted ten days after attack, typical of ruptured ectopic pregnancy. General condition good. Operation showed left tubal abortion. Large encapsulated blood clot and left tube removed. Recovery.

CASE X.—Columbia Hospital No. 3032. Admitted to hospital giving history indicating ruptured ectopic pregnancy of three weeks standing. General condition good. Pelvic mass could be palpable through abdomen. Right tube and blood clot removed at operation. Tubal abortion. Recovery.

CASE XI.—Columbia Hospital No. 000. Patient had a sharp, sudden pain in abdomen at 5:00 P. M. September 20, 1910. She was in collapse when seen by her physician. Admitted to hospital at 11:00 P. M. At this time she had reacted slightly. Pulse was merely perceptible and could not be counted. Temperature 98.6; air hunger marked. Severe epigastric pain.

Treatment.—Morphin sulphate grain 1/4. Atropine grain 1/150 hypodermatically.

Normal salt solution per rectum, continuously—about eight ounces per hour. Absolute rest.

Condition the following day: temperature 98; pulse 124; blood count, hemoglobin 45 per cent.; R. B. C. 2,800,000.

Improvement steady. Blood count October 4, hemoglobin 70 per cent.; R. B. C. 4,280,000.

Operation October 5, removal of right tube, showing rupture about one inch from uterus. Appendix also removed.

CASE XII.—Pittsburgh Hospital No. 8752. Admitted to hospital with following history: She was seized with acute colicky pain in lower abdomen, with marked tenderness and rigidity. Symptoms gradually subsided and ceased in about twelve hours. A second attack occurred two days later accompanied with moderate degree of shock.

Operation two days later. Ruptured tube removed. Recovery.

CASE XIII.—Pittsburgh Hospital No. 8752. Patient was seized with severe abdominal pain accompanied by vomiting. Shock moderately severe. She gave the usual typical history indicating a ruptured tubal pregnancy.

Operation within an hour or two after the attack. A large amount of blood found in the abdomen. Right tube ruptured about three-quarters of an inch from body of uterus. Tube removed, as was also the appendix. Recovery.

An interesting point indicating that a blood count made soon after rupture cannot be depended upon as a means of diagnosis in doubtful cases is afforded in this case.

Blood count immediately after operation: Hemoglobin 75 per cent.; R. B. C. 4,900,000.

Two days later, hemoglobin, 60 per cent.; R. B. C. 2,540,000.

CASE XIV.—Pittsburgh Hospital No. 9655. Patient referred for curettement following a supposed incomplete abortion.

The abdomen was opened and the unruptured pregnancy tube removed. Recovery.

CASE XV.—Pittsburgh Hospital No. 9800. Admitted to hospital two weeks after the beginning of her illness, which had not been diagnosed.

History typical of ruptured ectopic pregnancy. A large mass could be palpated through the abdominal wall. Patient extremely anemic. Blood count, hemoglobin 49 per cent.; R. B. C. 1,126,000. Operation deferred for one week with only slight improvement. At operation both tubes were removed with a very large encapsulated blood clot. Vaginal drainage. Recovery.

CASE XVI.—Pittsburgh Hospital No. 9693. Admitted to

hospital three weeks after rupture. Diagnosis had not been made. A large pelvic mass was palpable. At operation, the ruptured tube and large encapsulated blood clot was removed. Vaginal drainage. Recovery.

CASE XVII.—Columbia Hospital No. 6374.

Admitted to hospital June 27.

History indicated ruptured ectopic pregnancy three days previously. General condition good.

Operation June 29.

Ruptured left tube and blood clot removed. Recovery.

CASE XVIII.—Columbia Hospital No. 6116.

Patient sought relief from excessive vomiting of pregnancy.

Examination revealed pregnancy of about four months duration. To the right of the pregnancy uterus a mass was distinctly palpable. By vaginal examination could be felt what seemed to be the bones of a fetal head.

The history was elicited that six years ago her menses had ceased, her abdomen enlarged and that she experienced all the subjective symptoms of pregnancy. After six months, however, the menstrual function was reestablished and all other symptoms gradually disappeared. With this history and the physical examination a diagnosis was made of lithopoedion complicating pregnancy.

Operation April 28. The mass was encapsulated and was almost entirely covered by right broad ligament. There were a few intestinal and omental adhesions. Removal was easily accomplished. Fetus corresponded in size to a five or six months pregnancy. Abdomen closed without drainage. Convalescence normal. Vomiting ceased promptly. The remaining months of her pregnancy were uneventful and is at present passing through a normal puerperium.

CONCLUSIONS.

1. Ectopic pregnancy at any stage is purely a surgical condition.

2. The time of operation, in terminated ectopic pregnancy should be determined entirely by the patient's fitness to withstand surgical interference.

3. The time of operation should be decided by a competent surgeon, each individual case upon its merits.

4. Operation should be done at the earliest period of election.

5. To justify any given course of procedure, a low mortality rate must be shown.

LITHOPEDION.

Report of a Case, with a Review of the Literature.

BY

WILLIAM SEAMAN BAINBRIDGE, Sc. D., M. D.,

New York.

(With six illustrations.)

Report of Case.

Case.—Mrs. M. D., aged fifty-four years. Widow for fourteen years. Three children, one miscarriage; last child born twenty-four years ago. Menstruation perfectly regular from the time of birth of last child, until it suddenly ceased, at the menopause, four years ago. No period missed during the intervening years, and nothing to suggest another pregnancy. The miscarriage was the third pregnancy, one child being born afterward. Following the birth of the last child the abdomen, which was unusually large during pregnancy, remained larger than it had been previously. The patient was a large woman, so that no significance may have attached to this fact. She was always well and strong, except for some indigestion, and palpitation of the heart, apparently of purely functional origin.

The patient consulted me, February 10, 1911, giving a history of having noticed a lump in the lower abdomen two years before, which she thought had been increasing in size of late. She had been receiving electrical treatment "to absorb it," and had also been given large amounts of various medicines.

Physical examination revealed what was supposed to be multiple fibroids of the uterus. Four distinct tumors were felt, two of which seemed rather sharp than rounded. A mass the size of an adult human head extended up almost to the free border of the ribs, on the right side, across toward the bladder in front and the rectum behind. Adhesions between the tumor and the intestines could be made out.

The tumor simulated a fibroid connected with the uterus, seeming like a tumor from the fundus, but it was peculiar in that it was very hard, and that two sharp projections could be distinctly felt. The diagnosis was made of fibroid tumor of the uterus, with calcareous degeneration.

Some varicose spots were noted in the veins of the legs. No appreciable atheroma in palpable vessels. Heart and lungs apparently normal; urine normal.

Early hysterectomy advised. Patient admitted to the New York Skin and Cancer Hospital, February 8, 1911. Laparotomy, February 20. Median incision, through right rectus. The mass in the lower portion of the abdomen was found to be adherent to the left tube and ovary. All around the mass was an apron of omentum, and to the upper portion of the mass the transverse colon was adherent.

The supposed multiple fibroids proved to be a lithopedion, the large mass being the head, the two sharp tumors the elbows, and the fourth mass presumably one of the knees.

The accompanying photographs, by the official photographer of the hospital, were taken as the lithopedion was being delivered. Figures 1, 2, and 3, show successive stages of delivery. Figures 4 and 5 show the lithopedion in different aspects.

The patient was returned to bed in very fair condition. Because of the severe traumatism to the peritoneum and the forcible breaking up of the many adhesions in the removal of the tumor, she was kept on a very light diet, and was making an uneventful recovery, with heart and lungs in excellent condition. She would have been discharged within a day or two, when, on March 9, seventeen days after the operation, sudden death occurred, under the following circumstances, which, though in no wise associated with the operation or related to the lithopedion, are nevertheless sufficiently interesting to warrant a report.

On the afternoon of March 9, friends and relatives called and gave the patient some apples and peanuts, which were carefully secreted under her pillow. At 8.30 that night she ate some of these, which caused severe vomiting, with violent retching. At 8.59 she died.

The autopsy findings showed pulmonary congestion; atheroma of the coronary arteries; air emboli and clots in the anterior coronary arteries; chronic nephritis.

As may be judged from the accompanying illustrations, the fetus was of about seven months' development, the body being fairly well formed. The lithopedion weighs 2 3/4 pounds.

Inasmuch as the woman (of whose moral status there is no question) had been a widow for fourteen years, the lithopedion had been carried for at least that length of time. Inasmuch,

too, as she had not missed a menstrual period from the time of its establishment after the birth of the last child, twenty-four years before, the lithopedion had presumably been carried for that length of time. There was apparently no connection between the lithopedion and the miscarriage, which took place before the last pregnancy. It would seem, therefore, that the lithopedion was the result of a superfetation at the time of the last pregnancy. A small scar, found in the left tube just where the head lay, led to the conclusion that perhaps a tubal pregnancy occurred simultaneously with the uterine pregnancy, that this tube ruptured at an early stage, and that extratubal development continued up to about seven months, calcification of the extratubal fetus taking place after that time, the intrauterine fetus going on to full term in a normal manner. The calcification may have begun at an early stage of development, proceeding so slowly that growth was not completely checked until about the sixth month. This is purely speculative, however.

The specimen is a true lithopedion, according to the generally accepted classification. *x*-ray examination failed to give any evidence to the contrary.

This case of lithopedion happens to be the first which I have encountered in a large gynecological practice and in a comprehensive obstetrical experience, the latter obtained in part during an internship at the Sloan Maternity Hospital. My interest in the subject was specially aroused, and a careful review of the literature was made, a synopsis of which is given below.

THEORIES OF FORMATION.

In reviewing the literature of the subject I found that there is quite a diversity of opinion concerning the classification of these formations. It may not be without interest to some of the readers of this contribution to review the chief theories concerning the etiology, development, and classification of the calcified fetus and its membranes.

Gould and Pyle (*Anomalies and Curiosities of Medicine*), give the following reference to the subject: "Israel Spach, in an extensive gynecological work, published in 1557, figures a lithopedion drawn *in situ* in the case of a woman with her belly laid open.

"He dedicated to this calcified fetus, which he regarded as a reversion, the following curious epigram, in allusion to

the classical myth that after the flood the world was repopulated by the two survivors, Deucalion and Pyrrha, who walked over the earth and cast stones behind them, which, on striking the ground, became people. Roughly translated from the Latin, the epigram read as follows: 'Deucalion cast stones behind him and thus fashioned our tender race from the hard marble. How comes it that nowadays, by a reversal of things, the tender body of a little babe has limbs nearer akin to stone?'"

Küchenmeister (Ueber Lithopedion—*Archiv. f. Gyn.*, vol. xvii, p. 153, 1881), gives the most generally accepted theory

FIG. 1.—Step in operation.

concerning the formation of lithopedion, and the most widely accepted classification of the petrified or calcified products of conception. He classifies them, according to the extent and manner of calcification, as lithokelyphos, lithopedion. and lithokelyphopedion.

Lithokelyphos, according to Küchenmeister, originates in such way that the ovum as a whole, meaning the unruptured membranes and the fetus, is discharged into the abdominal cavity. This results in peritonitis, the products of which (masses of exudate) serve to strengthen the fetal membranes from without. The local organization of the exudate leads to the formation of strands and adhesions with neighboring organs,

while the exudates that have been deposited on the fetal membranes themselves gradually undergo fatty degeneration; after this is completed, calcification follows, forming a stony capsule around the fetus, after the fluid which surrounds it has become absorbed. The fetus itself is involved in the calcification only at those points where adhesion between the fetus and its membranes has occurred during fetal life. As a rule the fetus is probably cast out dead in its membranes into the abdominal cavity. Sometimes this may happen in the course of diminishing viability, at a time when the locally adherent fetal mem-

FIG. 2.—Step in operation.

branes are still connected with the pseudouterus, the fetus promptly dying under the absorption of the waters.

Lithopedion originates in such way that, after the waters have escaped through a large tear, at the rupture of the fetal envelope, perhaps also of its pseudouterine sheath, the membranes become wrapped around the fetus, the calcification beginning in the vernix caseosa between the fetus and the fetal membranes. In these cases a part of the fetal membranes may become detached from the placenta, and become twisted in strands as far as the point where the untorn membranes are wrapped around the fetus, after the fetus itself has been torn away from the umbilical strand and the placenta. It is not impossible, theoretically, according to Küchenmeister, for an

entirely detached fetus to lodge in some place in the abdominal cavity, giving rise to local peritonitic exudates, and to receive a secondary envelope, without fetal membranes, in the course of time, after the exudates have been organized. Such an occurrence can be decided only by anatomico-microscopical findings in the sheath, in a given case. If the fetus is still in some way connected with the fetal membranes, it might possibly survive for some time after the rupture of the membranes, to which it is partially attached.

Lithokelyphopedion can be formed only in a case of a fetus which was already adherent to its membranes during fetal life.

FIG. 3.—Step in operation.

Küchenmeister gives twenty-three cases of lithokelyphos, dating from 1728 to 1880; three cases of lithokelyphopedion, dating from 1582, 1659, and 1720; nineteen cases of lithopedion, dating from 1661 to 1877.

Freund (*Beiträge zur Geburtshilfe u. Gynaekol.*, vii, 1903), says the etiology of lithopedion formation has been referred by some observers to purely physiological causes. The theory propounded by Kroemer is considered very plausible by Freund. According to Kroemer the dry metamorphosis is introduced by the withdrawal of the amniotic fluid and of the body-juices, this taking place more rapidly in proportion to the absorptive power of the surroundings. Hence this is more likely to occur in the

peritoneal cavity, not so easily in tubal pregnancies, rarely or perhaps never in the uterus. Freund, in continuing this explanation, points out that the absorptive power of the surroundings is in its turn dependent on its capacity for reaction, meaning that the condition must be favorable for adhesions of the dead ovum with the fetal sac. This is the case where the sac consists mostly of connective tissue, muscle tissue, elastic fibers,

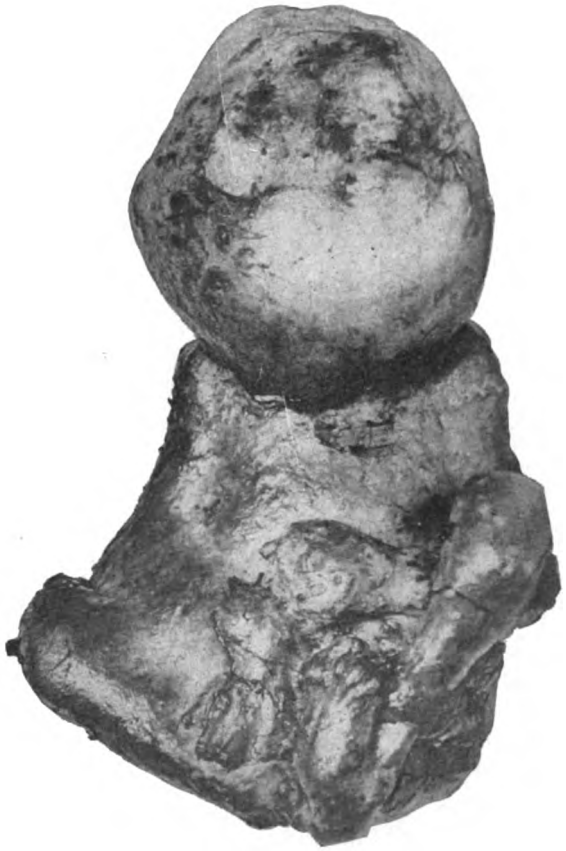


FIG. 4.—Lithopedion. Front view.

and mucous membranes with their epithelium, being much less suitable for this purpose, or not at all. The scanty uterine lithopedia were not accepted by Webster (1896), who interpreted them as very probably of interstitial origin.

Next to these cases, the pregnancies in a so-called horn of the uterus enter into consideration, the interstitial and true tubal

pregnancies following next in order. Apoplectic bloody extravasates around the ovum, and pathological loss of epithelium, according to Freund, perhaps play an essential predisposing part for adhesions, especially as the connective tissue element in the sac wall progressively predominates with the further advance of all tubal pregnancies.

In the remaining ectopic gestations, the tuboovarian, tuboabdominal, ovarian, and especially abdominal type, the pre-

FIG. 5.—Lithopedion. Side view.

dominant or pure connective-tissue character of the sac is sufficiently pronounced to explain the adhesions to the surroundings, which are responsible for the absorption and the excretions of the lime-salts, in consequence of the improved circulation through the inflammatory stimulus of the dead body.

The age of the fetus, according to Freund, in old ectopic gestations, is by no means easy of determination. In the most

favorable cases the anatomical findings (chiefly the length and development of the individual bones) are assisted by a good history, which clearly shows the onset of labor at the calculated term.

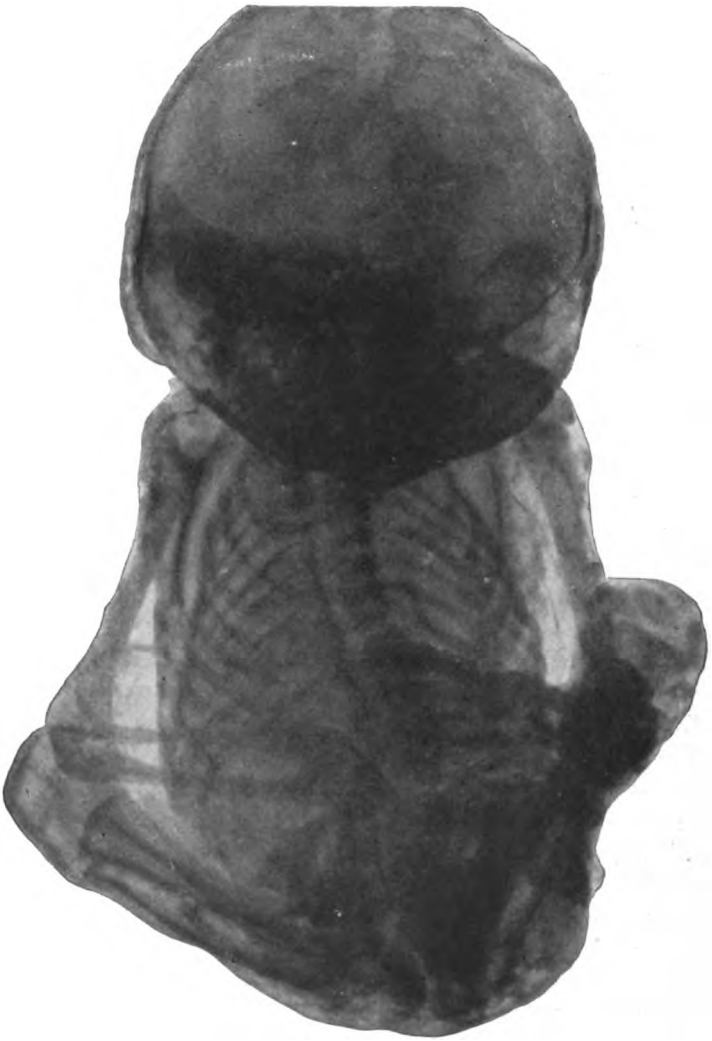


FIG. 6.—Radiograph of lithopedion.

The weight of the reported lithopedions is not proportionate to the age of the fetus, and still less to the time of the retention. Oppel thinks the weight varies according to the stage of absorp-

tion or calcification, but reaches its greatest height in the third decade and the beginning of the fourth decade after pregnancy. Freund does not accept this interpretation, in view of the enormous difference in weight of the individual reported cases. He admits that the age of the fetus, and the mass of deposited lime salts, furnish the main factors in the increase in weight. A definite system cannot be formulated, however, especially as the second factor, in his opinion, depends principally upon local causes, in a given case, such as extent and importance of the adhesions, and especially circulatory relations.

The outcome of lithopedion formation may be *suppuration*, although this is less apt to occur than in other extra-uterine pregnancies. There is a possibility of infection from adherent intestines. Infectious diseases are very apt to induce suppuration of all tumors, including lithopedion. Pressure-necrosis, with subsequent secondary infection from the outside, may give rise to suppuration.

The carriers of lithopedions are remarkably free from troublesome symptoms, according to Freund. Cases are on record which remained perfectly free from disturbances for many years, when fistula formation, suppuration, and marasmus followed. Others suffered from minor disturbances, pain on change of position, or during defecation; digestive disturbances, etc. In some of the reported cases the unrecognized pregnancies terminated in more or less severe peritonitis, from which the patients recovered and remained free for the period of thirty and eleven years respectively in two cases, finally being compelled by dangerous abdominal symptoms to undergo operation.

Subsequent pregnancies and deliveries have been known to occur without trouble of any kind. In Kroemer's case there were three spontaneous abortions, in Freund's case there followed one natural birth, and in Leopold's case three easy confinements occurred while the lithopedion was being carried.

Among eleven cases compiled by Freund, six women (54 per cent.) reached a very advanced age without an operation. Among the remaining five, three recovered, and two died, after operative intervention (Freund's and Hammer's cases). In these two instances the therapeutic measures were greatly hindered by suppuration and cachexia, which terminated in death.

Lithokelyphopedions perforate as the result of pressure erosion, and usually do not undergo suppuration until secondarily, through germs entirely from the outside. The more connective-

tissue-like the ectopic sac, and the more vascular its adhesions, the more likely are mummification and calcification of the entire ovum to occur.

The diagnosis of lithokelyphopedion is based upon calcification of the fetal membranes, and adhesions of the same with the fetus, which is likewise calcified, especially at the points of contact.

Werk (*Winckel's Handbuch der Geburtshilfe*, vol. ii, Part I, Wiesbaden, 1904), says calcification is the terminal stage in the series of changes undergone by the product of conception, when decomposition fails to occur.

The most detailed description of the calcification process, still admitted as correct in all the essential features, according to Werk, was contributed by Kieser, in his Inaugural Dissertation, Stuttgart, 1854. The latter described a lithopedion which is still preserved in the collection of the Women's Clinic, in Tübingen. The specimen was obtained in 1720, at the autopsy of a woman ninety-four years of age. It was derived from an ectopic pregnancy in the year 1674, which is said to have been followed by two births at term. The fetus was much bent and folded, enclosed in a capsule of lime, covered on the outside with dry pseudo-membranes. Part of the surface of the fetus was adherent to the inner surface of the capsule. The superficial soft parts of the fetus were calcified in the area of the adhesions, while the fetus was otherwise in a state of simple mummification.

On the basis of the examination of this specimen, and careful study of the available cases up to 1854, Kieser arrived at the conclusion that in the formation of socalled lithopedion the deposit of calcium begins in the maternal envelope, and only secondarily involves the fetus (previously mummified), and only in those parts which are in contact with the covering layer.

Referring to Küchenmeister's work (op. cit.), Kieser gives the following exposition of the classification of the calcified products of conception: 1. Cases in which only the maternal envelope or sheath is calcified, whereas the fetus is simply mummified, and not adherent to the former—*Lithokelyphos* (from a Greek word meaning egg-shell). 2. Cases in which the calcification has also involved the fetus, which is adherent to the coverings—*Lithokelyphopedion*. 3. Cases in which the fetus alone is the seat of lime deposits. These are said to concern invariably a fetus lying free in the abdominal cavity, the vernix caseosa

supplying the foundation for the calcium deposits, which form a crust of progressive thickness around the shrinking fetus—*true lithopedion.*

Küchenmeister's article, according to Kieser, did not materially contribute to the knowledge of the pathologico-anatomical character of so-called lithopedion, but laid more stress on the several varieties, and also enriched the obstetrical terminology in the nomenclature of these subdivisions. This utilization of the available material in the literature, in support of the division proposed by him, was considered by Kieser to be somewhat arbitrary. The type designated by Küchenmeister as lithokelyphopedion (for which he was unable to quote more than three examples, two inaccurate and arbitrary), is undoubtedly, in Kieser's opinion, the most common of all. He refers in this connection to the eleven cases cited by Freund (op. cit.), and expresses the opinion that this number could doubtless be increased by other examples.

Kieser holds that the majority of cases of lithokelyphos were not examined thoroughly enough to exclude a partial participation of the fetus in the petrifaction. Hence the occurrence of this type is probably much less common than appears to be the case according to Küchenmeister. He also considers the third type, true lithopedion, to be represented by Küchenmeister in too voluminous a group. Almost all the cases grouped under this heading concern an abdominal fetus, as a rule with extensive peritoneal adhesions and pseudomembranous coverings. The latter are usually interpreted as fetal membranes, though it is considered by some to be a secondary envelope. This envelope represents the matrix for the introduction of lime into the fetal body itself.

Concerning the *source of the lime salts* (calcium carbonate and phosphate) excreted into the fetus and its coverings, Kieser holds that the salts deposited in the fetus itself as well as its coverings must have been supplied from the outside, as the fetal body does not contain enough soluble calcium salts in its body-juices to permit the formation of macroscopical deposits. The supply of lime salts can therefore take place only through the maternal blood current and juices, and the formation of deposits can occur only in areas which are still within the reach of the latter. It has been known, since the days of Virchow, that the occurrence of the calcification-process requires for its basis,

besides the presence of necrotic tissue, also a diminished circulation, as to the velocity and extent of the flow.

This condition is met with in the walls of old closed amniotic sacs, as well as in the secondary coverings of a fetus that has been originally free in the abdominal cavity. For, in the course of retention of the dead fetus, as Kieser points out, the specific stimulus of pregnancy, which dominates the development of the bloodvessels, progressively loses in efficiency, while the peritoneal irritability gradually subsides, all this being associated with an extensive retrogression of the vessels in the fetal coverings. Moreover, it is also necessary to take into account the influence of senile involution, in the numerous cases of lithopedion which have been reported in middle-aged and even very old women.

Under the influence of this vascular degeneration, the circulation is apt to lessen especially early and thoroughly in the innermost layers of the fetal envelope, in the contact-zone between the maternal and the fetal tissue, which for some time possessed the sharacter of granulation-tissue, and therefore retains a tendency to cicatricial contraction.

Proportionately, deposits of lime are seen to occur, first at the internal boundaries of the maternal enveloping tissue, while the calcification only gradually involves also the external layers of the fetal capsule. This serves to explain the not uncommon arrangement in layers (stratification) of the lime-shell. It also explains, according to Kieser, the fact that in cases of complete calcification of the fetal capsule there usually still exists an outermost vascularized tissue-layer, free from calcium.

After an inflammatory process, penetrating from the maternal envelopes into the dead fetus, has established a communication between the two, the vascularized connective-tissue substance in the dead fetal tissue undergoes the same fate as the parietal tissue of the walls. Contraction of scar tissue follows, with narrowing and obliteration of vessels, and after these retrogressive processes have run their course, lime begins to be deposited.

In a case observed by Kieser, of a lithopedion which was still carried in the abdominal cavity fourteen months after the death of the fetus, large collections of lime were found only in the facial region. The fetus, in this instance, was surrounded by a connective-tissue membrane, which was supplied with vessels by way of the adherent omentum, and which was widely adherent to the surface of the fetus. Small deposits of lime could be

demonstrated, by microscopical examination, in other localities in the superficial layer of the body. These small deposits, without exception, were situated within the maternal connective tissue which had penetrated into the fetus, usually only in its deeper layers, more particularly at the tip of the wedge-like processes of the new tissue, which were pushed out into the subcutaneous layer. The small lime foci were often found lying in sharply outlined gaps of the subcutaneous layer, giving the impression of dilated capillaries.

In the further course of the process the dead fetal tissues themselves may also undergo calcification. This can take place, however, only in the immediate vicinity of the organizing maternal tissue, and still within the field of efficiency of the maternal juices.

The apparently free, genuine lithopedions originate in the same manner, according to the author quoted. After the fetus, which has been studded with lime deposits from the penetrating maternal tissue, comes to be very old, it may happen that the maternal tissue contained in the fetus undergoes, as a whole, a retrogressive metamorphosis, terminating in calcification. The originally solid connection of these tissue-processes with their matrix, the maternal enveloping layer, in the meantime becomes again loosened.

This mechanism, together with the fact that the penetration of the maternal granulation-tissue into the fetus often takes place only in circumscribed localities, rather than large surfaces, accounts for findings such as those described by Wyder (*Archiv. f. Gyn.*, vol. xvii, p. 2541), and quoted by Kieser. In this instance a very old lithopedion presented flat islands of calcium at the internal surface of the lining membrane, interpreted as fetal membrane, to which corresponded foci of calcification in the skin of the fetus, some penetrating more deeply. The skin between these foci was unchanged, covered with lanugo, and only loosely applied to the sheath.

Kieser is convinced that almost all cases of peripheral calcification of the fetus originate in the manner described above. The lining membrane itself, whose tissue-processes form the basis or at least the starting-point of the calcification within the fetus, may remain free from coarse calcium deposits. Even when there is no closed envelope around the fetus, there always exist partial adhesions to the omentum, etc., from which the

maternal tissue distribution within the peripheral parts of the fetus, which precedes the calcification, may take its origin.

Kieser holds that there are no conclusive proofs of a mode of calcification and crust formation derived from the vernix caseosa, as assumed by Küchenmeister. He does not deny that from the fluid which surrounds the living fetus lime salts may become deposited upon the same after its death; he believes, however, that such a deposit amounts to no more than a slight finely granular precipitate, of the character described in certain cases.

Lime salts may also be precipitated from other fluids which for a long time surround a necrotic, more or less mummified or disintegrated fetus, as, for example, in chronic suppuration in the fetal membranes. These lime salts may encrust or even impregnate portions of the fetus, which accounts for the frequently reported findings of similar material, lime-encrusted skeletal fragments, in perforations of a suppurating sac.

Even the impregnation of the entire fetal body with lime salts, a true petrifaction as far as the core, will have to be admitted as possible under the above-described conditions. Kieser holds this view, and also states that this is most likely to occur in a fetus that has perished at an early stage of development. A petrified fetus of this kind is cited as being preserved in the Würzburg Women's Clinic.

Kieser calls attention to the fact that, besides a dead fetus that has been carried for a considerable length of time, with or without calcification of the fetus or its coverings, deposits of lime, sometimes very abundant, are usually found in the necrotic placenta. The deposits in such case are free within the intervillous spaces, in the form of loose crumbling masses, and undoubtedly derived from the maternal circulation in these spaces, which very gradually subsides after the death of the fetus. Foci of calcification may or may not be simultaneously present in the wall of the fetal envelope.

The occurrence of a true ossification, instead of simple lime-impregnation, does not seem to Kieser to have been proved.

The remarkable state of preservation of lithopedions is accounted for by Kieser as due to the presence of two conditions, viz., freedom from microorganisms, and prompt dessication of the fetal cadaver. Softening of the cadaver from within and from without is thereby prevented, and a state of dry necrosis is brought about, which alone permits a conservative reaction on the part of the organism of the host. Microscopical examina-

tion serves to show that the preservation concerns only the solid and more highly differentiated structural elements, the muscles as well as the connective tissue and elastic fibers. Since these form essentially the frame-work of all organs, the external configuration of the organs is retained. The cellular tissue-constituents, on the other hand, undergo the characteristic changes of dry necrosis, in such a way that the cellular substance shrinks, or undergoes granular disintegration.

Strauss (Zur Kasuistik und Statistik des Lithopedions, *Archiv. f. Gyn.*, vol. lxviii, H. 3, 1903) contributes a personal observation on a case of lithokelyphos, according to Küchenmeister's classification, and reviews the literature of the subject from 1880 (up to the time of Küchenmeister's article) to 1900. He collected eleven cases of lithokelyphos, six cases of lithokelyphopedion, and twenty-one cases of lithopedion.

Strauss believes lithopedion to be the most frequent formation, as it requires the fewest conditions for its occurrence, and is rendered possible by the fact that the most common outcome of extrauterine pregnancy consists in rupture of the sac.

The *frequency of lithopedion in extrauterine pregnancy* is given by Schrenck (*Ueber ectopische Gravidität*, Inaugural Dissertation, 1893) as 1.8 per cent., or eleven among 610 cases. Schauta (*Beiträge zur Casuistik, Prognose und Therapie der Extrauteringravidität*, Prag, 1891) found nine lithopedions among 626 cases, or 1.5 per cent.

CASES FROM 1900–1911.

Taking up the subject where Strauss left it, I have reviewed the cases published from 1900, inclusive, to the present time. No attempt has been made to classify the cases according to manner of calcification, that is, as true lithopedion, lithokelyphos, and lithokelyphopedion.

1. Hennig (*Centrlbl. f. Gyn.*, No. 5, p. 159, 1900): Presented before the Obstetrical Society, Leipzig, November 20, 1899. Lithopedion, intrauterine. No details.

2. Bryant (*Guy's Hospital Reports*, vol. lv, 1901): Acute intestinal occlusion, through adhesion of intestinal coils with a lithopedion, found at autopsy, Carrier, thirty-seven years of age. Lithopedion size of a five months' pregnancy. Knuckles of small intestine were adherent to the lithopedion in two localities.

3. Slajiner (*Centrlbl. f. Gyn.*, No. 22, 1901): Carrier, thirty-

one years of age. According to the history and local findings the diagnosis was extrauterine pregnancy, with dead fetus. Laparotomy. Fetus found to be covered with omentum, forming some adhesions. Attached to placenta only by sclerotic umbilical cord. Fetus of male sex. The entire skin looked as if it had been tanned, while the body was fairly well rounded throughout. In several places the skin presented yellowish-white streaks, which were shown microscopically to be deposits of lime in and under the skin. Small calcium deposits were found in the adhesions, and at the points where these had been situated. The superficial skin layers were unchanged, but the deeper layers, especially the subcutaneous cellular tissue, presented numerous heaps of granular lime, which yielded the typical microchemical reactions. The outer subcutaneous cellular tissue contained numerous fat crystals. The muscular layer showed no microscopical changes.

4. Roster (*Centrlbl. f. Gyn.*, No. 28, 1901, page 823; also *Trans. Toscana Obstetrico-Gynecol. Soc.*, Florence, meeting, June 6, 1901): Presentation of radiograph of a case of lithopedion

5. Van der Linder (*Jour. d'Accouchement*, No. 38, 1902; also *Jour. de Chir. et Annual d. l. Soc. Belge de Chir.*, No. 11, 1902): Lithopedion, corresponding to the end of pregnancy, carried nearly twenty-two years. It had entered the abdominal cavity through tubal rupture, and had here continued to develop. The woman had been treated at the time, twenty-two years ago, for abortion, but the fetus had not been found. During all these years her health was good until two years before, when she began to suffer from abdominal disturbances. Celiotomy was performed, revealing the lithopedion lying free between the coils of the intestine, and adherent to the omentum, with its entire right side. There was no trace of placenta, umbilical cord, or fetal membranes.

6. Kessler (*Gesellschaft, f. Geburtshilfe u. Gynaek.*, Berlin, meeting of February 14, 1902. *Centrlbl. f. Gyn.*, No. 13, 1902): Specimen of lithopedion demonstrated.

7. Amann (Verhandlg. d. x Versammlung d. dtsch. Ges. f. Gyn., Würzburg, June 3–6, 1903. *Centrlbl. f. Gyn.*, No. 27, 1903): Demonstrated, among other specimens, a lithopedion and a lithokelyphopedion.

8. Rosthorn (Heidelberg), at the same meeting (op. cit.), presented a specimen of *lithokelyphos interstitialis*.

9. Brewis (Edinburgh Obstetrical Society. *Scottish Med. and*

Surg. Jour., February, 1904): Demonstration of lithopedion, obtained at autopsy, which had remained forty-one years in the abdominal cavity.

10. Keitler (Geburtshilfl. Gynaekol. Gesellschaft, Wien, meeting of November 10, 1903. *Centrlbl. f. Gyn.*, No. 9, 1904): Demonstration of a fetal sac, with a mature fetus, which had been carried for twenty-two years, by a woman more than fifty-five years of age. Sac partly calcified—lithokelyphos.

11. Martin (Ein Lithokelyphos; inaugural Dissertation, Griefswald, 1904): Lithokelyphos, found at autopsy on a paralytic woman of seventy years of age. Size of ostrich egg. Inside the calcified sac was a well preserved fetus. The fetal parts contained no lime deposits.

12. Haultain (A Case of Lithopedion Forty-one Years in the Abdominal Cavity.—*Jour. of Obst. and Gyn. of the British Empire*, vol. vi, 1904): Patient, seventy-one years of age, was pregnant at the age of thirty, but had never been delivered of a child. The abdominal swelling remained for some years, then gradually diminished in size. She died suddenly of heart disease, and autopsy revealed a calcified fetus, to which the uterus, which was atrophied, was adherent. The normal configuration of the fetus was preserved to a remarkable degree. The tissues were contracted and calcareous on the limbs, but on the back, scalp, and breech they seemed of normal thickness.

13. Lumpe (*Monatschrift. f. Geb. u. Gyn.*, vol. xxii, 1905): The patient was a widow, sixty-four years of age, in whose case a tubal pregnancy, with rupture about the seventh month, and secondary abdominal pregnancy, with formation of a lithopedion, were successively removed by laparotomy. The fetus of seven months had entered the abdominal cavity, leaving not only the pregnant tube, but also the fetal membranes. This pregnancy dated about twenty-five years back. The right tube, and both ovaries, were normal in proportion to the age.

14. Bürger (Vienna Obstetrical and Gynecological Society, meeting of November 8, 1904. *Centrlbl. f. Gyn.*, No. 19, 1905): During operation for cervical cancer by means of the modified vaginal method, the right adnexa were found to be embedded in extensive adhesions, in the midst of which could be palpated a small hard body. This proved to be a lithopedion. There was nothing in the patient's history to suggest an old tubal pregnancy, though it was supposed that this had occurred.

15. Herlitzka (*Centrlbl. f. Gyn.*, No. 39, 1905): The patient,

forty-four years of age, gave a history of eleven pregnancies, including four abortions. The last confinement was four years ago. For two years she had noticed a resistance in the lower left side of the abdomen, which at first caused no disturbance, but later gave rise to slight pain. Examination by palpation demonstrated a tumor of stony hardness, the size of the hand, in the left iliac fossa. The diagnosis, by exclusion, was made of old tubal pregnancy, with mummified fetus. This was confirmed by laparotomy. The extirpated fetus proved to be a true lithopedion.

16. Fothergill (North of England Obstetrical and Gynecological Society, meeting of November 17, 1905. *Jour. of Obst. and Gyn. of the British Empire*, ix, 1906, page 67): Lithopedion, successfully removed from a patient thirty-five years of age. The left tube showed no definite sign of having been ruptured, but its surface was roughened by the remains of adhesions separated during the operation. The specimen was found to consist of the bones of a fetus of about five months, compacted into a rounded mass and to some extent infiltrated with calcareous salts. It was partially covered by a thin, more or less calcified, membrane. The ribs, scapulæ, iliac bones, and the long bones of the limbs were easily recognized. This pregnancy had ended seven years previously.

17. Beede, S. C. (*Surg., Gyn. and Obst.*, September, 1906, page 374): Lithopedion, removed from a woman fifty years of age, who gave a history of pregnancy dating back more than nineteen years.

(Beede, believing that some estimate of the frequency of this condition would be of interest, addressed letters of inquiry to fifty representative Western surgeons. Forty replies were received, reporting in all eighteen cases. Only twelve of these were undoubted cases of lithopedion, the others being macerated products, or of uncertain origin. Of these twelve, four had developed to term, one to eight months, one to six months, one to four months, three to two or two and a half months, and two not stated. Two had remained in the abdomen twelve years; as to the others, the time was unknown or not stated.)

18. Wallart (*Zeitschrift f. Geb. u. Gyn.*, vol. lix, H. 2, 1907): Lithopedion, found at autopsy of woman eighty-five years of age. It was free in the abdominal cavity, where many adhesions had formed with the omentum and a coil of intestine. The age of the calcified fetus corresponded to the fifth month. No anam-

nesis was obtainable, but if the cessation of the menstrual periods is assumed to have occurred at the age of forty-five, the presumptive age of the lithopedion must have been at least forty years. Changes at the left tubal end, and especially the absence of recognizable portions of the left ovary, suggested a tubo-ovarian pregnancy.

19. Falk (Berlin), (*Centrlbl. f. Gyn.*, No. 43, 1907, page 1308): Lithopedion from an ovarian pregnancy. The specimen was not obtained at operation, but at the autopsy of a woman seventy-five years of age, who had carried the lithopedion for about thirty years, during which time she had given birth to a child at term. The diagnosis had been made long before, but the patient had never consented to an operation. The specimen showed the right ovary transformed into a tumor the size of a man's head, with deposits of calcium in the walls. The right tube was perfectly free and visible as far as the fimbriated end in front of the tumor; behind the tube, the ovarian ligament passed close to the tumor. In cross-section, a child nearly at term was seen in a crouched position, a little to the middle line. The head, vertebral column, extremities, viscera, female genitals, placenta, and umbilical cord, were all plainly visible.

20. v. Holst (*Centrlbl. f. Gyn.*, No. 15, also No. 34, 1907): Lithopedion, obtained by laparotomy, from a woman, who had carried it for six years. The patient recovered from the operation. The structure, position, and size of the various skeletal parts could be very distinctly seen on radiographs. The tumor occupied the fimbriated end of the left tube, and was markedly adherent to the pelvic floor. The specimen was analyzed and examined microscopically. The sternum was found to be entirely cartilaginous; the vertebral column consisted of numerous pieces of cartilage and bone. It was noteworthy that the cells still took in part a very good stain, in the vertebral bones and cartilages. Evidently these cells still survived, and the bone-formation from cartilage was not yet entirely completed. Instead of bone-marrow, there was an entirely fibrous connective-tissue, which was probably developed from the preserved endosteum, whereas the free marrow-cells had entirely disappeared.

21. Hayd, H. E. (*Am. Jour. of Obst.*, vol. lvi, 1907, page 657): Lithopedion or lithokelyphopedion, twenty-two years old, successfully removed from a woman sixty-four years and seven months of age. Reported before the American Association of Obstetricians and Gynecologists, September 17–19, 1907. The

abdominal tumor, which the patient had carried for many years without inconvenience, had to be removed on account of progressive weakness, severe pains, and a bad general condition. On operation a stony mass weighing over two pounds was shelled out of the left broad ligament, without any bleeding, and the patient made a good recovery from the operation, but died a few weeks later from pleurisy. There was a history of pregnancy and missed labor when the patient was thirty-five years old. The specimen was globular in shape, surrounded by a dense hard covering about as thick as thin cardboard. After sawing through the outer envelope the fetus was seen firmly bent upon itself, with the arms and legs like flattened bands. The calcified membrane was firmly adherent to the head and spine and back of the legs and arms. The abdomen, chest, side of head, arms, legs, and fingers, even the fingernails, were in perfect preservation.

22. Elbrecht, in discussing the above case, reported a case of tubal abortion, with complete detachment of the fetus from the placenta at six months, resulting in omental attachment and beginning lithopedion.

23. Price, in discussing the same paper, recalled a large specimen of this nature, with a foot protruding from the sac.

24. Morehouse and Griswold (*Jour. Am. Med. Asso.*, January 19, 1907, page 222): Lithopedion, carried twenty-six years or more, patient sixty-two years of age. Removed by laparotomy. The specimen was a complete skeleton of a fetus of five or six months, flexed on itself, complete in every respect, even to the preservation of the bones of the hands. The specimen is now in the museum of Rush Medical College.

25. Weibel (*Centrlbl. f. Gyn.*, No. 37, 1908, page 1227): Lithopedion after ovarian pregnancy; obtained from a woman fifty-seven years of age. History of extra-uterine pregnancy twenty-seven years before. Laparotomy, on account of hard, immovable tumor, size of man's head, in left half of abdomen. The specimen consisted of the placenta, the very well preserved nine months' fetus, and the closely adherent membranes. Deposits of lime were demonstrated in individual organs (liver, kidney, lungs, muscle and skin), being absent from others.

26. Smith, J. W. (*Jour. Obst. and Gyn. of the British Empire*, March, 1908, page 180): Lithopedion, retained in abdominal cavity for fifteen years and a half, after rupture of a tubal pregnancy at the end of the sixth week. Carrier forty years of age.

The presence of the lithopedion resulted in acute intestinal obstruction. The patient died some hours after removal of the generally adherent lithopedion and relief of the intestinal obstruction. The specimen weighed one pound and five ounces, the whole being hard and calcified. The placenta, though calcareous, was not very hard, and at more than one point there was a tendency to crumbling. The survival and calcification of the placenta appears to be of rare occurrence, as in many of the recorded cases of lithopedion no mention is made of traces of the placenta having been found.

27. Staniszewski (*Centrlbl. f. Gyn.*, No. 48, 1909, page 1646): Lithopedion, removed by operation, demonstrated before the gynecological meeting of the Warsaw Medical Society, November 27, 1908.

28. Schauta (*Centrlbl. f. Gyn.*, No. 29, 1909, page 1023): Lithokelyphos, removed by operation from a patient thirty-three years of age, who gave a history of seven confinements. The disturbance which led to operation began eighteen months before, at which time the patient failed to menstruate, and considered herself pregnant. In the fifth month she felt distinct fetal movements, and finally neared the time of full term. About this time she fell on the staircase, and had labor-pains, with much discharge of water from the vagina. Five weeks later a membrane was passed from the uterus. The abdomen retained the same circumference, but seemed to become progressively harder. The patient then remained free from symptoms for four months. After fifteen months the periods returned. The specimen in this case is noteworthy for the reason that the intrinsic portion of the tube is entirely undeveloped, so that the pregnancy actually originated from the ampullary portion of the tube. The ovary was not involved in the formation of the capsule. The capsule, examined microscopically, showed infiltration with lime-salts. (Sections of this were projected upon the board at the meeting of the Vienna Obstetrical and Gynecological Society, March 2, 1909.)

29. Balfour (*British Medical Journal*, No. 2, 1909, page 1615); also *Jour. of Obst. and Gyn. of the British Empire*, Vol. xvii, 1910, page 247): Lithopedion, removed by operation, from a Hindu woman, thirty-two years of age, who had carried it three years. The specimen consisted of a nearly calcified fetus, nine inches in length, attached by long adhesions to the omentum and anterior abdominal wall. There were no remains of pla-

centa. The patient made an excellent recovery from the operation.

30. Hall (*Jour. Obst. and Gyn. of the British Empire*, xvi, 2, 1909; *Lancet*, i, 1909, page 1380): Lithokelyphos, removed by operation from a woman forty-five years of age. She had been married twenty-one years, had had no children, but gave a typical history of ruptured tubal pregnancy soon after marriage, when the tumor for which she was operated appeared. The tumor was found to be a calcified spherical mass, as large as a child's head, which, on section, proved to be a perfect fetus encased in a calcareous shell.

31. Schuhl (*L'Obstetrique*, xiv, 1909, page 222): Lithopedion retained nearly twenty-seven years, carrier fifty-five years of age. In spite of the retention of this seventh months, calcified fetus the patient had four normal uterine pregnancies, the first of which was a forceps delivery, the others terminating spontaneously. (This observation was published, after the first of these confinements, in Schuhl's *These de Nancy*, 1883.)

32. Van der Veer and McCabe (*Albany Medical Annals*, No. 4, 1910): Lithopedion, autopsy findings; carried thirty-five years; carrier, sixty-five years of age. Lithopedion entirely free in abdominal cavity, except for slight adhesions of intestine and peritoneum. There was one normal childbirth three years before the pregnancy corresponding to the lithopedion, and another three years later. The diagnosis was made in this case in 1909, by Dr. McCabe, and consent obtained to perform an autopsy when occasion offered.

33. Weidlich (*Centrlbl. f. Gyn.*, No. 20, 1910): Lithopedion, in the urinary bladder, of patient forty-three years of age. The patient had missed her menstrual periods during five months, six years before. She suddenly became ill with very severe colicky pains and fainting spells, and was treated for several months for peritonitis. Severe gastritis, with intolerable colicky pains for a year past, undoubtedly due to a tumor, the size of a nut, which projected into the bladder. The bladder was opened by way of the vagina, when the diagnosis of lithopedion was rendered possible by the removal of the skull bones. In the midst of the work the small bones slipped away from the finger, and disappeared into a hole. Laparotomy was performed, under the assumption that the bladder had been perforated. It was found that a coil of small intestine communicated with the bladder, the lithopedion being contained partly in the

bladder and partly in the intestine. Healing took place, and the patient made a perfect recovery.

34. Fraenkel (*Centrlbl. f. Gyn.*, No. 35, 1910, page 1169): Lithopedion. A twelve to fourteen weeks' fetus escaped, with the placenta, into the abdominal cavity, where it remained for over one year. They were found to be closely adherent to the intestine and the omentum, with abundant new formation of blood-vessels, the fetus itself having become transformed into a true lithopedion.

35. Martin (*Annals of Surgery*, August, 1911): Lithopedion. Reported before the New York Surgical Society, April 12, 1911. The patient, thirty-nine years of age, had been a widow four and a half years. During the last year of her husband's life she believed herself to be pregnant, and at the end of the fourth month took measures to terminate the pregnancy by the introduction of a stylet and the injection of kerosene into the uterus. Moderate hemorrhage followed. Since that time she had had attacks of pelvic pain, which had recently become more severe. Upon vaginal examination a hard mass could be felt in the posterior culdesac. X-ray examination showed an indistinct shadow low down in the pelvis. Laparotomy revealed a hard mass, the size of an orange, on the right side, adherent to the uterus, which was normal in size. This tumor was composed of an adenomatous mass and the skeleton of a fetus, apparently of the fourth month. The fetus had apparently been in the abdominal cavity for four years.

REMARKS ON TEACHING OBSTETRICS.

BY

HENRY SCHWARZ, M. D.,

Professor of Obstetrics and Gynecology, Washington University Medical School, St. Louis, Mo.

THE teaching of obstetrics in the United States has in past years been so inadequate that the graduates of the greater number of our medical schools have entered into practice with little or no clinical experience in this most responsible branch of Medicine; a number of these incompetents made up this deficiency in their medical education by serving as internes in maternity hospitals, or by taking postgraduate courses at one of the few medical centers in the United States, which were equipped for this work, and a select few went abroad for their obstetrical training.

At present conditions are rapidly changing for the better; and in every state of the Union the medical schools, either from their own desire for advancement, or because they are forced to do so by state boards of health, are making honest attempts to give their students bedside instruction in obstetrics.

The difficulties which most of these schools experience in attempting this change from the time-honored didactic lectures to bedside and laboratory instruction, are so great and, at the same time, so little appreciated by those who have not worked under similar conditions, that a short description of the evolution of the teaching of obstetrics in the Washington University Medical School and of the manner in which this teaching has been carried on during the last few years, may be a help to some of those who are at present confronted by the same problems.

For the successful teaching of obstetrics four things are absolutely necessary—namely, qualified teachers, well prepared students, reasonable place and space in the curriculum and the necessary equipment.

1. *Qualified Teachers.*—The best qualification for a teacher and the one which should be insisted upon wherever possible, is that he has served a thorough apprenticeship in the practice and in the teaching of Obstetrics in a teaching institution.

2. *Well Prepared Students.*—Medical students in the United

States are rapidly improving in quality; in any school with average entrance requirements and with thorough courses in the ordinary subjects of the first two years the student who has successfully passed these courses is ready for obstetrical instruction.

3. *Reasonable Place and Space in the Curriculum.*—The curriculum of most medical schools is overcrowded; this is especially the case where students are still allowed to enter the school without credit in chemistry, physics and biology; these subjects must become entrance requirements, so that the first two years can be devoted entirely to anatomy, embryology, physiology, pathology, bacteriology and other subjects usually taught during the first two years, thereby leaving the last two years almost exclusively for clinical medicine.

In these two years the students must be prepared for the work of the general practitioner which consists mainly in the treatment of medical cases, in minor surgery and in obstetrics and, therefore, medicine, surgery and obstetrics must be given enough time for thorough instruction, while the undergraduate instruction in the various specialties should be limited. Obstetrical teaching differs from the teaching of any other branch of medicine in this, that in the entire scope of obstetrical work, there is not one chapter which might be safely omitted from the teaching of undergraduates; the youngest practitioner will be confronted by cases of placenta previa, eclampsia and other complications, at times and in places which make it impossible to call in more experienced colleagues, or to consult a text-book; he must be prepared to meet these emergencies without a moment's notice, else the two lives which are at stake in every case of confinement may be lost.

Instruction in obstetrics should begin with the junior year and continue to the time of graduation. Sixty hours during the third year and one hundred and twenty hours during the fourth year, that is to say, one hundred and eighty hours exclusive of the time spent in delivering women and in watching them during the lying-in state, is a fair arrangement, which cannot be much reduced in hours without impairing the efficiency of the instruction.

4. *The Necessary Equipment.*—A good example of the most desirable equipment is the modern Frauenklinik as we find it in connection with German universities; such a clinic has its maternity department with an outclinic service; it has its clinical labora-

tory; its department library; its historical collection of instruments; its museum of pelves and specimens, and a liberal supply of manikins, models and other teaching apparatus; it has also its gynecological department and is splendidly equipped for graduate teaching and for investigation and research; it enjoys, likewise, a liberal annual appropriation.

It is well for us to strive after such ideal conditions and to gather hope from the fact that many of the most renowned schools of obstetrics in Europe had a small beginning.

The minimum obstetrical equipment which to-day ought to be required of every medical school should be about as follows:

A. Control of sufficient obstetrical material to make it possible for every member of the senior class to receive a reasonable training in the examination of pregnant women. To be present and to assist at the delivery of at least five women and personally to deliver under an instructor not less than two cases, so that for a senior class of fifty the school should furnish a minimum of 100 confinements a year.

B. Equipment for a thorough manikin course.

C. A small, but well selected collection of specimens, pelves and teaching apparatus.

D. A clinical laboratory.

E. A small working library consisting of a few text-books and laboratory guides.

EVOLUTION OF OBSTETRICAL TEACHING IN WASHINGTON UNIVERSITY.

In 1899 the Medical Department of Washington University, formerly the St. Louis Medical College, was merged with the Missouri Medical College and this consolidated school is now known as the Washington University Medical School.

I was made professor of obstetrics and the department was turned over to me; the equipment consisted of two old manikins, two broken dolls and the semblance of an outclinic, which had been running two or three years without being able to get a proper start. It was located in a small room on the second floor of the college building, which had been furnished so that a student and a dispensary physician could sleep in it and attend on obstetrical cases to which they might be called; a meager obstetrical satchel had been furnished and the college janitors had taken care of the room. The outclinic physician was appointed from the graduating class each year, he did the best

he could and the next year turned the place over to his successor, who had to start all over again; a small endownemt which the school had received provided an annual income of $480.00 to pay this physician, whose expense for meals, laundry and car-fare consumed all or nearly all of this $40.00 per month; the clinical material never exceeded twenty-five cases a year, and it served principally for the self-training of the outclinic physician.

Since that time the clinical material has increased from year to year, so that during the fiscal year 1910–1911 the 500 mark has been passed and the steady growth bids fair to continue. The class of thirty-three seniors, who were graduated in June, 1911, had personally delivered under supervision of qualified instructors 418 cases at term, and they had witnessed over 100 additional cases for which they received no individual credit; these were in great part complicated cases, which were delivered before sections of the class, including forceps-cases, breech and face presentations; cases of placenta previa and of eclampsia, and also two pubiotomies and three Cesarean sections. Thus every member of the senior class had delivered an average of twelve cases and had been present at the delivery of several times that number.

Let us now consider how this change was brought about and point out that part of my experience which may be a help to those who are facing the same problems.

When I took charge of the teaching of obstetrics under the conditions mentioned, I saw the opportunity for which I had been waiting and for which I had prepared myself in a five years' apprenticeship to Prof. Kehrer, of Heidelberg—namely, the opportunity of establishing a "School of Obstetrics."

The first thing to do was to put the outclinic in perfect running order. The janitors of the college had failed to keep the out-clinic room in habitable condition; students and assistants alike were disinclined to occupy it; so I put the case before my wife. She at once rectified conditions by having the furniture destroyed; by having the wall-paper removed; by having the room disinfected and calsomined; by having it refurnished with sanitary furniture and by sending a woman around once a week to give the room a thorough cleaning; this woman was likewise to take bed-sheets, pillowslips and blankets to her own home for washing. Mrs. Schwarz also established telephone-service at her expense and furnished new and well equipped obstetrical satchels, and she continued to care for this outclinic until July, 1910, when

this clinic was removed to the Washington University Hospital, and the University assumed the financial responsibility.

The next step consisted in providing skilled obstetrical service for the outclinic patients. This was done by establishing a system by which the service of each assistant was extended to two years; during his junior year he was to receive a thorough training in obstetrics, so that in his senior year he should be able to take reasonable care of the outclinic and to act as instructor to his junior, so that my own activity in the outclinic might be limited to a general supervision and to the handling of special complications; this means, that we started out with one paid assistant, and that during the first year it was necessary for me to be present at as many cases as possible, and to act as bedside instructor to both assistant and student and that with the beginning of the second year a second assistant was installed, the junior residing in the outclinic room, and the senior being provided with quarters nearby.

Next it became necessary to provide real dispensary facilities, that is to say, a place, in which pregnant women may be conveniently examined and registered, and to which they can return after delivery for a final examination. This was an easy matter, because I had been conducting a gynecological dispensary in the basement of the college-building, and all that was necessary was to encourage the obstetrical cases to report at this place. Here sections of senior students received a thorough training in the examination of pregnant women; including pelvimetry; the latter, of course, could be practised on any of our patients.

The next step consisted in arranging lectures and recitations and in providing teaching apparatus. The old curriculum provided for two hours a week in the junior year and one hour a week in the senior year; these hours and the time spent by the seniors in the obstetrical dispensary and the obstetrical outclinic were sufficient for the start, especially because I had to do all the teaching myself until I had trained a few men for this work; the only addition which was made to this curriculum consisted in having the fourth part of the senior class come to my home every Saturday night, where from 8 to 10 o'clock were held quizzes and manikin courses, which were soon supplemented by lantern-slide illustrations. These Saturday evenings accomplished a good deal and the students were eager to attend; they were discontinued in 1905, after the epidiascope, which had been exhibited at the World's Fair by Zeiss of Jena, had

been installed in the college-building, and had become available for obstetrical teaching.

Some difficulties were encountered in securing the necessary teaching apparatus; natural female pelves and fetal skulls are to be bought only in small numbers and at very high prices; obstetrical manikins are likewise hard to get and still harder to keep in repairs. The greater part of my equipment came from two sources; from John Reynder & Co., 303 Fourth Avenue, New York, who at that time handled the "Aids in Obstetric Teaching," originated or referred to by J. C. Edgar. I secured "The Edgar Bronze Pelvis, mounted on Tripod" and "The Edgar Aluminum Cast of Sagittal Mesial Section of Bony Pelvis, Mounted on Blackboard and Tripod," and I have found both of excellent service and continue to use them; from the firm "Medicinisches Waarenhaus, No. 31 Karl Strasse, Berlin, N. W. 6," I secured leather dolls for the old manikins, which I had repaired and later on some new manikins after Schultze, the kind which I find the easiest to handle and the least expensive to keep in repairs.

The Berlin House proved especially satisfactory in providing certain models for teaching and in furnishing pelves and fetal skulls of Papiermaché, which are excellent substitutes for teaching purposes, most of these models are devised by Winternitz; special mention deserve plaster-of-Paris busts, eight in number, illustrating the configuration of the fetal head during its passage through the pelvis; a model on a stand illustrating the fetal circulation; another model showing a pregnant uterus of the second month to demonstrate the various layers of decidua; an excellent aid in teaching is the model by Zangemeister, demonstrating the passage of the fetal head through the vulva and the guarding of the perineum (received lately).

Of the Papiermaché imitations I have found those of fifteen abnormal female pelves of the collection in the Berlin Frauenklinik of especial value.

All this teaching apparatus and the collection of specimens which had been started, required room for safe keeping and this was hard to get; these things had to be distributed over the college buildings wherever space could be secured, and it is only since the concentration of the department in the Washington University Hospital, that they are properly cared for.

In the meantime the system worked satisfactorily; with each year the number of obstetrical cases increased and the number

of qualified teachers or consultants to the outclinic likewise increased; for in the first place several of the former assistants, after serving their term, remained as instructors in the department, and all of those, who located in St. Louis, are in friendly touch with the work of the clinic and can be pressed into service during any emergency.

In this way we worked for six years; we had no department laboratory and the library was represented by the most necessary text-books; but what we missed most was the absence of hospital facilities; complicated cases had to be attended at the home of the patient, and extreme cases had to be referred to city institutions, where we lost control over them, or they were sent to private hospitals and had to be paid for.

In 1905 the Medical School, recognizing the urgent need of some hospital facilities under absolute control of the school, established the Washington University Hospital in the buildings formerly occupied by the Missouri Medical College; enough space was given to my department to establish a delivery-room, a large obstetrical ward for white women; sleeping quarters for one assistant and several students, and a department laboratory; the outclinic still remained in the present college building, as did also most of the teaching apparatus, and obstetrical instruction was carried on at these two places.

In 1910 the Medical School began the reorganization which is still under way; for greater efficiency the entire department was concentrated in the Washington University Hospital, and it is now in a position to do reasonably good work until the new buildings which are contemplated will be ready for occupancy.

Obstetrics and gynecology form one harmonious and undividable department in the Washington University Medical School; this paper, however, deals only with the problem of teaching obstetrics, which offers many difficulties not fonnd in the teaching of other branches of medicine, and which cannot be successfully carried on without a number of assistants and instructors, whose full time belongs to the department.

The present plan of instruction for undergraduates as outlined in the catalogue of the school has worked satisfactorily for three years and is as follows:

JUNIORS.

Obstetrics 1.—Demonstrations and recitations. This course covers the essentials of obstetrics and closely follows a text-book.

The students are given assigned reading. The course is illustrated by the epidiascope, specimens, models and charts. Two hours a week during the year—60 hours.

SENIORS.

Obstetrics 2.—Lectures and demonstrations on selected topics. Each one is complete in itself and treats of such subjects as placenta previa, eclampsia, etc., etc. They are illustrated in the best way possible and are freely discussed by and with the students, who have already practical clinical experience. One hour a week during the year—30 hours.

Obstetrics 3.—*a*. Actual work in the laboratory in examination of urine, blood, lochial secretions, chorionic villi, etc.

b. Bedside instruction in the examination of pregnant women, including thorough instruction in pelvimetry; studying the conditions, normal and pathological of the puerperal woman and of the new-born infant.

c. Manikin practice in the application of the forceps, management of breech presentations, versions, etc.

The senior class is divided into three sections; each section attends the Maternity Department of Washington University Hospital an hour and a half a day for a period of ten weeks Every section is subdivided into three groups, each of which does the work as outlined, under a special instructor—75 hours.

Obstetrics 4.—The Washington University Hospital and out-clinic department furnish from 500 to 600 cases a year. Each student is assigned ten cases or more, which he visits during pregnancy, attends personally during delivery, and continues to visit during the lying-in state. All the work is done under the supervision of competent instructors, and the history of each case as furnished by the student is discussed in clinical conference —from the end of the junior year to the end of the senior year.

The department is likewise prepared to give graduate instruction.

ASEPTIC OR ANTISEPTIC HANDS IN OBSTETRIC PRACTICE? WHICH AND WHY?

BY

DOUGLAS H. STEWART, M. D.,

New York City.

HERETOFORE, many men might have answered the above question in an off-hand, haphazard fashion and after answering they might have rested content and considered the matter settled for all time. The result of this would be practically the same, whether their guess was right or wrong; that is, the guesser if questioned would find himself at a loss to give a single good, practical and unassailable reason in support of the accuracy of his decision; after all he would only be guessing. Nor do I now know of any experiments, except my own, which tend to prove or disprove, one way or the other, any opinion which might be advanced by any one; even though the promulger deduced it solely from speculative or hypothetical premises which appear more or less probable. If there are dark spots of ignorance from which aseptic obstetrics may not yet have emerged perhaps this is the blackest. A very irreverent young medical fledgeling suggests that I call my paper the "Black Hand of Obstetrics." I would call it anything so that I drive home the fact that the matter is not trivial and that the circumstances seemed to justify me in endeavoring to try out the whole affair, to discover the actual facts, to discard all speculation and to get down to the bottom of things as they are. In so doing it has been necessary to make many cultures and blood-serum was commonly employed as the medium, although in case of doubt agar-agar was also of service. The results I give to you hoping that they may prove of some small interest and value.

The fact that most patients do not require a vaginal examination need only be mentioned and dismissed from consideration, inasmuch as this paper only deals with those in whom it is requisite. The question at issue not being the necessity of exploring the parturient canal with hand or finger, the sole point raised is, "Shall Asepsis or Antisepsis be employed and what are the good and logical grounds for our selection of one or

the other?" Discussion as to the need of the exploration might be interesting but it would carry us far from our theme.

As to the canal itself I carefully verified the generally accepted opinion that a normal vagina is generally germless and the usual vulva is germ-laden. Cultures taken from the latter did not invariably show pathogenic germs, but that is beside the mark, since our aim must be to have absolutely negative tests; because with absolute negation our protection is perfect, but if nonpathogenic germs sometimes appear then our protection against the pathogenic is slim indeed. In other words our asepsis and antisepsis must both be as complete as we can make them; therefore our test media must remain germless or negative after the probationary trial smear or stab.

The average parturient canal is a channel clean internally but contaminated externally: or it is a germ-laden opening leading to a sterile vagina. Admitting this state of affairs after the culture tubes and the incubating ovens had proved it to be correct, as applied to the average woman under average conditions and environment, I found, as might well be anticipated and foretold, that it was impossible to introduce a sterile glass rod or rubber-glove finger without carrying vulva-born germs into the vagina; nor was it possible to withdraw rod or finger uncontaminated. No antiseptic was used in vulvovaginal-tube so that the test of the hand should remain a clear issue. A common test of a rubber glove was to draw the boiled glove on a carefully cleansed hand, then obtain five control cultures from the fore-finger: after that introduce the finger into a vagina, withdraw it and make five other cultures from it; finally to separate the lips of the vulva and make five more trial cultures from the vaginal floor. The further conduct of the cultures showed that our asepsis had entirely broken down, and that now both the glove-finger, after withdrawal, and the vaginal floor yielded cultures of germs which were at first limited to the vulva; nor could I find that the conditions differed in any way whether an ordinary unboiled glove was picked up from the table and pulled on the examining hand or whether the carefully boiled glove was used. Perhaps the yeasts were a little more constant but even this is doubtful, and as I say there was practically no difference so far as I could discover. The great point, that was most impressive, was "Where is the profit in it all?" What is the use of all the trouble and care requisite to obtain asepsis if it is so easily nullified. So hard to obtain and so impossible to

maintain. Nay more, our manipulation had for its definite final result that we had contaminated the vagina with a mixed infective material carried in from the vulva. If my tests proved anything they proved that reliance on the aseptic hand simply made sure that conditions against which we strove to guard were made rather worse, unless the vulva was made rigidly aseptic also. A very few cultures convinced me thoroughly that a sterile vulva is rare indeed at least under any of the usual technics.

The vulvæ with which I experimented all showed good, vigorous, mixed cultures and were selected for that very reason. Because if a hand could be made sterile, and so maintained, the contact with a contaminated vulva was a good test of the power and permanency of a very desirable condition of affairs. How asepsis broke down, readily, under this trial has been shown above.

In order to show how ephemeric asepsis is, I made fifty tests of rubber gloves which were boiled twenty minutes, dipped in cool sterile water, to eliminate the heat factor, and laid on sterile china plates, all taking place in an ordinary room with the door and a window partly open. One test was positive after two minutes, all were positive after thirty-six minutes and the conclusion reached was that asepsis of an untouched, unhandled glove might possibly be relied on for five or ten minutes. If a pair of contaminated gloves were thrown into a boiler in the ordinary way, and allowed to float, then asepsis was frequently not obtained. I therefore took a round nutmeg grater (price ten cents), put the gloves inside that and dropped it in the sterilizer. It sank at once and its rough sides protected the gloves from coming in contact with the boiler or with any instruments which that boiler might contain. I usually use this in hospital and private work and medical friends think well of it as being just the thing they have been looking for, in the way of a glove-boiler.

To sum up the above seems to make but two inferences: 1. That there is small advantage in having a sterile glove to pass through a germ-laden vulva. 2. The very fact that the glove is aseptic makes it particularly favorable as a carrier of pure cultures of certain germs (for example, the gonococcus), the growth of which might be interfered with by the so-called "overgrowth" when a contaminated glove was used. That is, full development of a weaker germ might be impeded by ad-

mixture with another germ of sturdier growth, an advantage which will appeal more to the bacteriologist than to the accoucheur.

You will have noticed that in speaking of asepsis reference has been made almost exclusively to the gloved hand or finger. This has been done because the glove is generally considered to have an advantage over the bare hand and I wished to present asepsis at its best. I use gloves, personally, because I have brought my bare finger in contact with a chancre of the cervix on two occasions. Nothing happened but there were possibilities which were not pleasant to contemplate. Aside from their protection to me I can find no special advantage or disadvantage in the use of rubber gloves. They have come to stay, or so I believe, but I also believe that both their advantages and disadvantages have been exaggerated. Possibly it is easier to boil a pair of gloves, draw them on and diminish the tactile sensibility 1/2 of 1 per cent., than it is to sterilize the hand in any other way. But this does not free us from the necessity of carefully preparing the hand on which these gloves are drawn. If there is any advantage let it lay in favor of the aseptic hand and let me narrate briefly my experience with the natural, ungloved but antiseptic one. The antiseptic named shall be chlorinated lime. There are other and possibly better ones but this is simple, well-known, easily obtained and quite sufficient for a good contrast of the aseptic with the antiseptic hand in accouchment.

Suppose the hand cleansed; suppose lime and soda used as usual until the hand is perfectly clean, and suppose some additional lime is applied to the wet hand, worked up into a paste and allowed to remain, then that hand should have been by turns clean, antiseptic, aseptic and is now antiseptic again. Whereas the aseptic is neutral or passive, the antiseptic, bearing a germicide, is a weapon. Furthermore, while the asepsis may, or may not, be maintained for a few minutes I once, for test purposes, kept my hands antiseptic, sterile and practically germ-proof for twelve hours—when the test ended. How much longer I could have maintained the condition of course I do not know but could see no reason against indefinite continuance, except personal fatigue. Now it is well known that chlorinated lime is an irritant; but like most of irritants of what may be broadly termed "medium intensity" the severity of its action and its consequences depend largely on continued or repeated contact. For instance, one's hands would hardly be made sore by applying

it on Monday (say) even though they might be very painful and eczematous if it were used on Monday, Tuesday, and Wednesday. Therefore after a few tentative trials I had small hesitation in introducing my finger into the vagina even when that finger was well smeared with the pasty lime. Nor was I surprised when the patient assured me that it was not uncomfortable. But, mark the difference, whereas the gloved aseptic finger practically always gave positive cultures, after its introduction and withdrawal, and whereas the once sterile vagina was contaminated and gave also positive cultures; now neither the finger nor the vagina yielded anything but negatives under proper technic. If the accoucheur prefers to use gloves does it not seems that even then the antiseptic glove is preferable to the aseptic and for the very reason given above, viz., that antisepsis is active in the patient's defense while asepsis is merely passive and difficult to maintain.

SUMMARY.

The vagina is a sterile canal and to reach it we pass through a contaminated ring, the vulva. To do this by introducing an aseptic finger means contamination of both finger and canal. To introduce an antiseptic finger means the contamination of neither. Therefore the antiseptic finger or hand is the best for obstetric purposes.

I have simply given the results of my experiments without loading down a little paper with statistics, but every step of my experimentation has been careful and painstaking; and may be readily duplicated.

Dr. LEWIS GREGORY COLE, of New York City, read a paper on a

"RADIOGRAPHIC STUDY OF MOTOR PHENOMENA OF THE PYLORIC END OF THE STOMACH AND DUODENUM WITH A VIEW TO THE EARLY DIAGNOSIS OF CARCINOMA, ULCERS AND ADHESIONS IN THIS REGION, ILLUSTRATED BY LANTERN SLIDES AND CINEMATOGRAPHIC FILMS"

of which the following is an abstract:

This paper is the second of a series on "The Radiographic Diagnosis of Gastric and Duodenal Lesions." The first of the series described the different types of unobstructed gastric peristalsis, and the systole and diastole of the stomach, and I cannot refrain from giving the salient points of the preceding article, for it would be exceedingly difficult for one to understand the motor phenomena of the pylorus without understanding the motor phenomena of the remaining portion of the stomach.

First we will consider the various types of stomach regardless of the motor phenomena. These are: text-book, cow-horn, fish-hook, and drain-trap. This last type may not be normal.

We will now consider the various types of gastric motor phenomena and the systole and diastole of the stomach. These vary with the number of peristaltic contractions that are in the stomach at a given time, and there may be from one to six contractions—usually four—originating in the body or in the fundus and moving pyloricward. In addition to this there is a contraction and relaxation of the stomach as a whole which is best described as the systole and diastole. These are all fully described in an article which will be published in the *Archives of the Roentgen Ray*. Having briefly considered these, we will skip the pylorus and duodenum and consider the ileum and jejunum which, radiographically, is an unexplored field. The ileum is identified by the coagulated appearance of the bismuth and the jejunum is identified by the flocculent appearance. The second and third portions of the duodenum are usually readily identified by their shape and position unless the peristalsis is so active that it sucks the food away from the pyloric sphincter more rapidly than it is allowed to pass through. In such cases I have pursued

a method which will probably be applicable in many others, described as follows:

The patient swallows an Einhorn pyloric dilator. This is a small ball attached to a very small rubber tube, and near the ball is a small rubber bag which collapses around the tube just behind the ball. This is as easily swallowed as the ordinary "old-fashioned pill," and with the patient in a certain position, it will readily pass into the duodenum and jejunum. The small rubber bag is then inflated through the tube and acts as an intestinal obstruction. Bismuth and buttermilk is then given by the mouth and passes rapidly into the duodenum, which dilates, giving its contour perfectly, and if it is bound down by adhesions, such points show, as they do not dilate. I am having this apparatus modified so that the solution may be injected and evacuated from the duodenum through another small tube. This will allow of diminishing or increasing the amount of fluid in the duodenum at will.

Dr. Crane of Kalamazoo called attention to the fact that the size of the head of the pancreas could be determined by the size of the duodenum. The canal of Wirsung, which in this case is dilated near the center of the head of the pancreas, is readily discernible.

The first portion of the duodenum deserves special attention. Anatomically and physiologically it has always been considered a part of the small intestine but in reality I believe that it should be considered part of the stomach. This portion of the duodenum is usually dilated into a triangular cap, whose motor phenomena corresponds with the gastric cycle rather than the peristaltic action of the remaining portion of the duodenum. This is separated from the pyloric end of the stomach by a space of 3/16 of an inch, which indicates the normal pyloric sphincter. Both sides of the sphincter should be clear-cut and well defined during the stage of systole of the stomach.

We will now consider the motility and relation of the pyloric sphincter. The pyloric sphincter enjoys a moderate degree of motility, as only the second portion of the duodenum is held down by the peritoneum. In many cases, however, this motility is increased by a stretching of the gastrohepatic ligament and the first portion of the duodenum. In other cases the pylorus is bound down by adhesions so as not to allow the slightest movement. The relation of the pylorus with the umbilicus varies with the type, size and shape of the stomach; the umbilicus also

varies. The relation of the pylorus to the body of the stomach is much more important. But the most important question is the relation of the level of the food to the pylorus when the patient is in the erect posture. If the food is three, four or five inches below the pyloric sphincter and there are no peristaltic contractions, how is the food going to get out?

Dr. Crane of Kalamazoo has called attention to the relation of a local point of tenderness, or pain, on the abdomen, to an ulcer of the stomach or duodenum.

The following cases, which are briefly described in this résumé, were illustrated with lantern slides, but considering that this is only a résumé it was not deemed advisable to attempt to illustrate it with half-tone cuts.

The first three showed extreme cases of carcinoma unrecognized by competent diagnosticians: these were to illustrate the gap in diagnosis between the immediate past and the present.

The next one was a radiograph of a small annular growth at the pyloric end of the stomach verified by operation, but on account of the absence of glandular involvement it was considered benign.

A radiograph of a pathological specimen, which proved to be annular carcinoma, was then shown and attention called to the similarity between this one and the previous radiograph.

The next slide showed an unusually early carcinoma before the patient was fairly in the grip of the deadly enemy.

The diagnosis of gastric carcinoma in an early stage has recently been the height of the ambition of the radiologist, but this is now accomplished and, in a very large percentage of cases, he is justified in either making a negative diagnosis of carcinoma, or stating with certainty that there is some lesion either benign or malignant that requires immediate operative procedure.

The next group of slides illustrated adhesions involving the pylorus and the duodenum. This is a group of cases which Dr. Morris called to our attention in 1905, under the heading of "gall-spider lesions or cob-webs in the attic." In many of these cases I believe the adhesions are due to unrecognized ulcers of the pylorus or duodenum rather than of gall bladder infection. Radiographically we cannot always state the etiology of these adhesions, but there are some distinguishing features which are fully described in the complete paper.

Part of these cases require surgical procedure; part of them show definite lesions radiographically, but without sufficient

symptoms to justify surgical procedure. By far the most important group are the border-line cases where there are definite radiographic findings with obscure, indefinite, but prolonged symptoms referable to the upper part of the abdomen. These cases were illustrated by a number of lantern slides showing obstruction of the peristaltic contraction and the inability of the pyloric end of the stomach to expand when the food is pushed pyloricward by the peristaltic contraction. In some cases adhesions encircle the pylorus, in others they were limited to the first portion of the duodenum and the lesser curvature, and in others, the greater curvature, near the pyloric end of the stomach. The differentiation between adhesions and carcinoma was also described.

The last slide showed the very close relationship of the first portion of the duodenum to a group of gallstones which showed distinctly in the gallbladder.

The paper was then followed by a cinematographic demonstration of the various types of unobstructed peristalsis and also cases where the peristalsis was obstructed by carcinoma and adhesions from both gallbladder infection and ulcers.

THE RELATION OF GASTROCOLIC DISPLACEMENTS TO CERTAIN INTRAPELVIC CONDITIONS IN WOMEN.

BY

CHARLES A. L. REED, A. M., M. D.,

Professor in the University of Cincinnati,
Cincinnati, Ohio.

DISPLACEMENTS of the stomach and colon of long standing, and that have been almost uniformly overlooked, are of such frequent occurrence in my practice, and present themselves so often in connection with certain intrapelvic states in women, that I feel justified in bringing the subject to the attention of the Association. It is important, however, before taking up the clinical and pathological phase of the question that we should have a clear understanding of the normal position of the stomach and colon, concerning which there exists much misunderstanding, not, I am sure, in this audience, but in the wider audience that will probably be reached through the publication of this paper. It should be stated, too, that the misunderstanding to which I allude is directly traceable to the misleading points found in the older works on anatomy in which the stomach is depicted lying in a direct transverse position in the upper zone of the abdomen, while the colon is shown to define with geometric precision the three sides of a quadrangle corresponding to the two sides and upper extremity of the abdominal cavity. This misconception has, of course, been corrected, if it ever existed in the minds of all abdominal surgeons by their daily experience, and latterly in the minds of the general profession, or at least those members of it who have studied Cunningham's photographs from frozen subjects, or who have been so fortunate as to study anatomy as it is now taught in our more progressive medical schools. These studies establish the fact that, in the normal subject, the stomach lies obliquely across the abdomen, from the point of its esophageal attachment at the diaphragm, to a point in the right side of the abdominal cavity but slightly above the level of the umbilicus. The colon is found in the normal subject, especially when in the standing posture, to extend almost in a direct line from the ileocecal juncture in the right lower quadrant, obliquely upward and across to its rather firm and enduring fixation at its splenic flexure

in the left upper quadrant. In only a few cases have I found the so-called hepatic flexure presenting anything like the degree of angulation that would seem to entitle it to the designation of a flexure. It should be stated furthermore that deviations from the normal standard, such as I have outlined, may be very marked without any resulting functional disturbance that would seem to place such deviations in the pathologic category.

That there are, however, deviations from the normal in the position of the stomach and colon that do interfere with their functional integrity and with the functional integrity of other organs, especially those of the pelvis, is a matter of daily clinical demonstration. The stomach is not unfrequently found suspended from its esophageal attachment, hanging vertically in the left side of the abdomen, with its pylorus in the left iliac fossa, or, as sometimes occurs, in the culdesac of Douglas. In certain of these cases, the resulting angulation is in the stomach itself near the pylorus; in others, it is in the duodenum. The small intestines are less frequently, although sometimes, found in a state of marked decensus. The colon, however, is quite frequently shown to lie entirely in the lower zone of the abdomen, often kinked and reflected upon itself in such a way as necessarily to impede the fecal current and induce mischievous pressure upon all underlying organs and structures. In certain other cases, I have found the associated condition of some decensus of other organs, thus filling out the picture of general splanchnoptosis, or Glenard's disease. Thus there sometimes exists a displacement of either the liver or the kidneys, sometimes both combined; but, in the larger number of instances, these conditions exist independently rather than as complications of gastrocoloptosis.

The mechanical interference with (a) gastrointestinal function, (b) with the function of other organs, and (c) indirectly with the system in general, becomes apparent if we pause but for a moment to consider the factors involved in the problem. With the condition of stomach that I have described, there necessarily results an interference with the escape of ingesta into the duodenum, the decomposition of the retained stomach content, the perversion of the gastric secretion generally characterized by hyperchlorhydria, resulting not infrequently in the development of enteroptosis and the classic peptic ulcer. In a case referred to me by Dr. Greiwe, the patient had been the victim of succurrhea gastrica, necessitating the use of the stomach-tube twice and sometimes three times a day for years—a condition that disappeared immediately follow-

ing operation. The *x*-ray examination of these cases—something over forty of them—made by Dr. Sidney Lange, invariably show a marked retardation of the fecal current in the colon, the delay amounting at times to as much as forty hours in excess of the normal period. The hyperabsorption of material from the fecal content, and the resorption from the same medium of toxines once excreted by the liver, the mucous follicles of the intestines and other emunctories accounts in large measure for the toxemias, with resulting headaches and the general family of neurasthenic phenomena manifested in whole or in part by all of these cases. These neurotic symptoms are furthermore largely due to mechanical infringement on the various ganglia and plexuses of the sympathetic. The inferior mesenteric plexus, lying just at the juncture of the descending colon with the sigmoid, is so located that it cannot but receive a large proportion of the weight from the laden stomach and colon when displaced as I have indicated. The superior mesenteric plexus and the coeliac plexus with their numerous ganglia must necessarily be disturbed by the tension induced by even slight gastrocolic decensus. These mechanical disturbances of the sympathetic, resulting in more or less disturbance of its function as the controlling factor of the caliber of blood-vessels and of the hollow organs, is furthermore manifested through the autonomic filaments as superficial pain referred to one or the other quadrant, anteriorly or posteriorly, sometimes to more than one, especially the lower two, according to the ganglia or plexus more directly involved. I have repeatedly observed mechanical interference on the venous side of the mesenteric circulation, resulting in distention of the veins, suggestive of varicosities. This is also true of the gastric circulation. That this turgescence of the veins is due to the mechanical effect of the displacement is shown by the fact that I have seen it largely, if not entirely, disappear in the course of an operation, after the obstruction to the larger vein trunks had been removed by the replacement of the viscera. It is this state of venous congestion that, I am sure, is responsible for the severe pain about the cecum, and referred to McBurney's point that is so often taken as the early diagnostic sign of appendicitis. These are the cases that, prompted by the severity of the pain, its sudden onset and classic location, are hurried to the operating room, where an exploratory incision reveals the absence of any trouble in the appendix adequate to explain the symptoms. These are the cases that I have learned to designate as pseudo-

appendicitis. Their true condition is too frequently overlooked, even under exploratory incision, for the reason that with the patient in the delivery position, the stomach and intestines drop back to a relatively normal location, and even if the patient is in the horizontal position, the usual small incision will not enable the surgeon to determine the position of either of them.

It is not my intention in this brief communication to expand the foregoing general considerations into a discussion of gastrocoloptosis in its more general phases. I feel, however, that what I have already said, comprises a logical foundation for a consideration of the relation of these displacements to certain resulting intrapelvic states, particularly in women. These intrapelvic states may be summarized as follows, viz.:

1. *The Bladder.*—General irritability with diminished capacity, often resulting in incontinence of urine, especially at night. In multipara with enlarged vaginal outlet, the tendency to vesicocele is distinctly accentuated.

2. *The Uterus.*—There is a marked tendency of displacement, the inclination seeming to be greater in the direction of anteversion. The uterus in these cases is generally tender to the touch, and menstruation is ordinarily excessive, with more marked pain during the days of onset.

3. *The Ovaries.*—Ovarian pain is a frequent, but not constant, concomitant and the fact that the pain is ovarian is confirmed by tenderness of those organs in vaginal touch and on bimanual examination. In certain cases, the ovaries, one or both, can be felt in the culdesac.

4. *The General Pelvis.*—The general pelvic structures are tense, and impart to the examining finger the impression of a superimposed pressure. This superimposed pressure is felt at its maximum, when the patient is standing, and disappears when she is placed in the knee-chest posture.

In the absence of other and more obvious causes, it takes but little reasoning to connect the pelvic conditions that I have just mentioned with the gastrocolic decensus that I have previously described. It is evident that the intrapelvic disturbance may be effected through three, if not four, media: viz., (1) direct pressure, (2) venous engorgement, (3) sympathetic nerve disturbance, and (4) induced systemic states characterized more particularly by lowered blood states and general impairment of nutrition. The direct pressure may be considerable. I recall one case in which one of our ablest diagnosticians called me at nightfall to

operate for appendicitis. There had been a sudden onset of the severest pain in the ileocecal region; the tenderness over McBurney's point was so extreme that the patient screamed when she was touched in that locality; the muscular rigidity was marked; the patient had had a chill and there was a slight temperature reaction of possibly a degree. I, of course, at once confirmed the diagnosis, and we operated within the next two hours—only, however, to find a normal appendix. What we did find in addition to that was a colon, every convolution of which was laden with fecal matter, the entire gut looking much like the convoluted bologna sausage that one sees in the windows of the meat shops. The veins stood out on the colon, in the mesocolon, and in the omentum like quills, thus showing that the obstruction involved not only the mesenteric, but the gastroepiploic systems. This colon with its weighty content had been riding for years on an anteriorly displaced uterus, and on ovaries that had finally been goaded into such revolt that the patient was the victim of constant general pelvic distress, which was greatly aggravated by the approach of the menstrual period. In other cases, however, in which the demonstrated infringement of a less heavily laden colon on the pelvic organs was less than in the case just recited, the disturbance seemed to depend upon mechanical interference with the efferent circulation of the pelvis, while the disturbance of the sympathetic seemed to be responsible in a large measure for a neurosis that accentuated every pelvic pain of which the patient complained.

I have met several of these cases with a long history of stomach tubes, health resorts, curettages, uterosuspensions, hemorrhoidal excisions, divulsed sphincters, polytherapy, and, finally, that great panacea for otherwise incurable cases, travel. One of them, who was in my office only yesterday, and whose radiograph I show herewith, has exemplified precisely the history that I have outlined. I shall treat her as I am now treating all of these cases, by reposition and fixation of both the stomach and colon. I am happy to say that so far I have had no recurrence of these displacements, nor of the distressing symptoms that depend upon them. One case, sent me by Dr. Patterson of Brookville, Indiana, gave the history of a traumatic displacement of the stomach and colon, dating back eighteen years. She had had constant pelvic distress and constant constipation. Her bowels moved naturally the second day after operation; absolutely the first time such a thing had occurred in eighteen years, and the

pelvic pain, as well as the pain in her back, in the splenic region and in the lower right quadrant, in short, all of her pain has become a thing of the past.

Another patient, sent me by Dr. Greiwe of Cincinnati, and still another, sent me by Dr. Taylor of Maysville, Kentucky, have had a similar history, associated with a marked increase in weight. My final admonition here, to-day, is, keep the probability of gastroenteroptosis constantly in mind, and use it as your guide in the investigation of all cases of intractable pelvic pain, not explainable on any more obvious and plausible hypothesis.

DISCUSSION ON THE PAPERS OF DRS. COLE AND REED.

DR. ROBERT T. MORRIS, New York City.—I do not know why nature's plan should give us knowledge slowly; but it is the same plan which dictates whether an oak tree shall grow to 80 feet in height in 200 years, or 500 feet in a night. For thousands of years appendicitis was treated as a medical disease; then doctors found out it was a surgical disease. Dyspepsia was formerly considered a medical disease, but now we are finding out that it is largely a surgical affection; at any rate, the symptoms frequently point to a surgical condition or conditions. Now, in this group of dyspepsias, we have to consider, first, the fact that motility is the chief function of the stomach; that anything which interferes with the motility of the stomach leads to a long series of changes in concatenation. The primitive area of the stomach developed from the fore-gut, the pylorus and duodenum are under the control of the internal secretions—the chromaffin group. Whenever we have interference with motility at this point particularly, there is disturbance in the local gland secretion. The hormones, which send messages to the secreting glands, are apparently changed in character, and we have a series of disturbances known as the various dyspepsias. These may be grouped in two large classifications. First, the one in which the interference is mechanical, adhesion and scars; mechanical interference allows of disturbance of the hormones, the messengers send wrong messages to the secreting glands. In the other large group we have the decadent patients, the neurasthenics. We must separate this group very distinctly from the one in which there is mechanical interference with motility of the stomach. In the decadent group we find very frequently the high arched palate, facial asymmetry, gun-stock scapula and other stigmata, and in many cases of dyspepsia it is important to note, first, if we have the stigmata of degeneracy, and if we have, we must ask if there is a corresponding disturbance of the sympathetic apparatus controlling the movements of stomach and bowels. In that case, I would like to ask Dr. Cole if he can determine whether an irregu-

lar peristalsis, belonging to the neurasthenic group, can be distinguished as such, and if it can be differentiated from the mechanical group of interferences. If so, another very important step forward has been made.

During the past year nearly all of my cases of dyspepsia have been subjected to fluoroscopic examination of the stomach with bismuth. It has helped to find incipient malignant disease among cases of ulcer, and many cases of the group which I described as cases of cobwebs in the attic of the abdomen which have been regularly overlooked, or which have been diagnosticated as appendicitis, gallstones, ulcer of the stomach, or as many diagnoses as we formerly gave to appendicitis. It happens that in our anatomy, our physiology, we are subjected to marked toxic influences in the region of the bile tract, in the region of the pylorus and duodenum, and toxins escaping by excretion from the liver or by direct migration in this vicinity cause desquamation of the endothelium of the peritoneal side. When this endothelium desquamates, a plastic lymph exudes, in some cases adhesions form, and we have interference with the motility of the stomach or duodenum, including the pylorus. I am finding the colon bacillus as the apparent culprit in these cases. The work of Dr. Cole in bringing out this large group of cases will teach much about our dyspeptic patients. This new work of Dr. Cole's in determining the presence of such adhesions in this way is very important, as showing that we have interference with the motility of the stomach at that point. It gives us very definite testimony.

As to the question of diagnosis, Dr. Cole's method is one step nearer scientific accuracy.

To speak a moment of Dr. Reed's paper, we are dealing again largely with cases of ptosis, with the neurasthenic group of patients who have relaxation of the peritoneal supports. When we have relaxation of the peritoneal supports and various ptoses, a number of secondary changes takes place, the symptoms of which may become the dominant disturbing factors in the case, and if we relieve these we have done much to relieve the patient. But we have not relieved the underlying condition, and, according to Dr. Oliver Wendell Holmes, we should have gone back to the grand-parents. Again, neurasthenic patients are the ones who respond very promptly for a time to almost any operation, as well as they do to Christian science. It makes no difference what you do to them. They will respond to Christian science or to anything you may do for them. They are cured of their constipation and are relieved of various symptoms; they will gain from 15 to 20 pounds in weight, but after a year or two their neurasthenia will assert itself again and you have a long chain of symptoms. I must confess that I have done operations similar to those mentioned by Dr. Reed, in fact I was one of the first to shorten up relaxed peritoneal supports, beginning with the suspensory ligament of the liver, shortening the gastro-hepatic omentums and the gastro-colic ligament. While I have obtained

good results in some cases, yet I feel it was rather savage surgery, and of late I have been conservative and have recommended abdominal supporters and massage and traveling, and if these patients become too troublesome, I sent them on a trip around the world. (Laughter.) These patients need to be treated from the beginning with their grand-parents.

DR. G. S. HANES, Louisville, was asked to participate in the discussion. He said: I have done no work along the line indicated by Dr. Cole this evening, except to ascertain the possibility or probability of introducing flexible and nonflexible instruments and liquids into the upper limits of the large bowel. And also to estimate the capacity of the rectum and the entire large gut. I was convinced, after a number of radiographic pictures were made, that no instrument could be introduced through the rectum and sigmoid into the colon of the average individual. Later, I was convinced that instruments could not be introduced higher than the first half of the sigmoid. Soft rubber colon tubes usually coil in the rectum. I used bismuth in the liquids intruduced. I was in doubt about bismuth passing to the cecum, as there was considerable confusion in the shadows of a long and well distended sigmoid with those of the other portions of the large gut. Dr. Bruce and I had to tax our imaginations very liberally as every radiographer must often do to arrive at definite conclusions. I believe Dr. Reed and Dr. Cole saw things to-night that were not clearly visible to many of us. Not being exactly satisfied with the outline we are able to get of the large gut, we made a number of beautiful pictures which showed all the divisions of the large bowel by introducing bismuth into the cecum through an appendicostomy opening. I believe this is the best method known whereby we may get a correct notion of position, angles, size, etc., of the large gut in the living individual.

If I understood Dr. Reed correctly, he stated that it was his observation that the hepatic flexure was rather obtuse. It was my observation that the hepatic angle was very acute, while the splenic flexure was even an exaggeration of the former condition and always situated at a higher level. My observation has also shown that the normal transverse colon is much more mobile than was hitherto supposed. Patients were placed in the direct horizontal position, then with the chest elevated and again with the hips elevated, with the result that the transverse colon occupied distinctly different positions in the abdomen in each case. The fact is the transverse colon and the sigmoid are the only divisions of the large gut that have mesenteries which allow extensive mobility. I feel sure that we have all had a more or less incorrect notion of the length of the sigmoid especially. I have removed the sigmoid from twenty-five cadavers, the shortest being 8 inches and the longest 28 inches. Not a great while since some one reported a sigmoid 44 inches in length. The average length of the sigmoid is now considered to be about 18 inches. Passing from above downward the sigmoid begins at the

inner border of the left psoas tendon and has its termination about the middle of the third sacral vertebra, the two extremities being about 3 or 4 inches apart. With a long sigmoid having its two ends so near the two extremities of the colon, we can see how easy it would be to confuse the shadow of a distended sigmoid with the remaining portion of the colon. It should always be borne in mind that the mobility of the sigmoid depends on the degree of its distention. When empty, and there is no unnatural growth in the pelvis to crowd it out, it will be found in the pelvis in most instances; on the contrary it may by complete distension rise to the diaphragm and occupy a position on either side of the abdomen near the ascending and decending portions of the colon.

DR. LOUIS FRANK, Louisville.—I would like to ask Dr. Cole a question which was brought to my attention by Dr. Hanes and by Dr. Reed. Will Dr. Cole explain the position the patients were in when these pictures were taken, and if the pictures were taken with the patients in various postures. This is important in connection with the work Dr. Reed has been doing from a diagnostic standpoint. My observation in the operating-room has been in accord with the points brought out by Dr. Hanes, that the transverse colon has been found exceedingly low, much lower than we had ordinarily supposed it was, and that has been practically true in all these cases. I have noted a number of times in operations upon the stomach, that we should have to search and lift the colon up out of the abdomen in reaching the duodenum in order to make an anastomosis, and I have been impressed in these cases with the length of the mesocolon in its attachment to the transverse colon. I have also observed since this the enormous size and location in many instances of the sigmoid, and have frequently found it in abdominal operations lying over upon the right side, occupying a large portion of the iliac fossa.

I would like to ask Dr. Cole to speak upon the posture, and what effect, if any, it has upon the interpretation of these pictures from a diagnostic standpoint.

DR. COLE (closing the discussion on his part).—In reference to the remarks of Dr. Morris, what he said is true of a certain group of cases. Part of these cases were included in the first article on this subject which I referred to early in the paper; others will be dealt with in one of the later papers. It is very probable that a neurotic element is accountable for the absence of peristalsis or for the extremes in the number of cycles shown in the stomach; *i.e.*, one or more than five cycles, but I cannot conceive of a neurotic condition which would cause a wave, after it has once started, to stop in the middle of the stomach. I was rather surprised to hear Dr. Morris group so many of these cases under neurasthenia. I thought we were getting away from this condition just as far and as fast as science would take us.

Where and what is this degeneration?

I do not agree with Dr. Morris that it is necessary to go back and treat our grandfathers and great grandfathers in order to get results in these cases, and the different branches of science at the present time are finding causes for this so-called degeneration or neurasthenia, and in the very near future this term will be limited to fewer and fewer cases. I believe that the absorption of toxins is the cause rather than the effect of neurasthenia.

Regarding the work which Dr. Reed has brought before you, I congratulate him on this, and his work checks up very accurately with the work which is being done throughout the country by radiologists. From observing the radiographs Dr. Reed has shown, I see that he has followed the method of giving the bismuth by mouth. In this way one can determine the progression of food through the intestines, but he fails to get the true outline of the colon. Instead of this, scybalous masses, impregnated with bismuth, are observed in the colon. This procedure is of considerable value to determine the time that food requires to pass through the intestinal tract. Ordinarily bismuth that is introduced into the stomach passes through the small intestine very rapidly. It lodges in the ascending colon and remains in this portion of the gut for a considerable length of time. Just what the normal length of time for it to remain in this portion is I believe still to be determined Dr. Goldthwaite considers it should not remain over six hours in the ascending colon. Personally, I think that the time that it remains in the ascending colon depends upon the absorption of the food. It goes into this part of the colon in a fluid condition and it would be exceedingly inconvenient for it to pass through as rapidly as it comes in. I would, therefore, consider that the ascending and transverse colon is an organ of absorption and that the sigmoid and rectum is the reservoir. The method which I have used for the past five or six years is to give the bismuth by rectum rather than by mouth. In this manner the outline of the entire colon may be definitely determined, and I believe that this is the method now adopted by Dr. Lange whom Dr. Reed speaks of in the early part of his paper. Dr. Hanes stated that he could not see what we saw in these plates and that, in a measure, we imagined many things. Such a statement is so broad and indefinite that it is exceedingly difficult to answer in a public discussion. Dr. Hanes' observation regarding the passage of a rectal tube is absolutely correct, but his deductions that fluids will not pass readily through the colon to the cecum is absolutely wrong. I maintain, and have stated on various occasions, that if the colon is properly evacuated by the administration of cathartics for two nights and a saline cathartic the morning of the examination, that bismuth solution passed into the rectum will ascend to the cecum within eight or ten minutes, giving an outline of the entire colon, the segmental rings, the longitudinal line, and the caput coli. If the bismuth does not ascend to the cecum it is evidence of some obstruction.

This obstruction may be simply fecal accumulations which have not been completely evacuated by previous cathartics. When these cases occur a subsequent run of cathartics is given and the procedure repeated. And if on the second examination the solution does not pass all the way to the cecum within eight or ten minutes after it has been given by rectum, you can depend upon it that there is some obstruction in the gut, of the gut, or pressing on the gut.

Frequently the solution finds its way into the appendix and gives us an outline of the entire appendix. At the present time I am not prepared to state that the appendix can be injected in this manner in all normal cases, but this is a line of research work which I am carrying on at the present time.

In reference to Dr. Hanes suggestion of injecting the bismuth solution through an appendiceal fistula, I maintain that we can get just as good distention of the gut by giving the bismuth by rectum as by injecting it through an appendiceal fistula, and that the majority of patients are not provided with this convenient opening for injecting this portion of the gut.

In response to Dr. Hanes' question of the position of the patient at the administration of the enema, I would state that ordinarily with the patient in the prone posture, the distribution of the bismuth through the colon occurs in five minutes. In cases where it does not, the enema is given with the patient on the left side; the patient then assumes the knee-chest position for about thirty seconds and lies on the right side for about a minute; then is radiographed in the prone position with the abdomen flat on the plate.

If one want to determine the contour of the gut regardless of its position, the prone posture is the one which gives the greatest amount of detail, but if one wants to determine the amount of prolapse, radiographs are made in both the prone and erect postures. And if one wants to determine whether there are adhesions binding the colon to some adjacent viscera, radiographs are made with the patient in the reverse posture, practically standing on the head.

The stomach also varies somewhat with the posture of the patient. In the four types of stomach which I have mentioned, the plates were taken with the patient in the prone posture. A stomach which is of the text-book type in the prone posture would assume more or less of a fish-hook type in the erect posture.

In reference to the question asked by Dr. Walker, I would state that in the first three cases of carcinoma of the stomach, which I passed over rapidly because they were so extensive as to be of little value in the diagnosis, there was no evidence of retention of the food or strangulation.

DR. REED (closing the discussion).—I take great pleasure in answering some of the points and observations made by Dr. Morris. The hypothesis he has formulated in this instance is in

contravention to the biologic law that the acquired characteristics of one generation become the inborn characteristics of the succeeding generation. I do not think that our great grandfathers and our great grandmothers have anything to do with gastroptosis or of enteroptosis that we encounter to-day. Dr. Morris has proceeded upon the hypothesis that general peritoneal relaxation is an initial factor in these cases. There is not a particle of evidence, either indirect or direct, that this exists as an idiopathic condition. There is no evidence but what it is just as much a secondary condition as it is a primary one. There is very much evidence on the other hand that it is secondary. The condition which has been described by Dr. Cole and myself is much more logically the initial condition in the chain of pathologic events which occurs in these cases than the contrary, and proceeding upon that hypothesis we get our patients well. To say that these patients get well if we do any other kind of operation, or if we do no operation, but rely on suggestion, is to concede rather too much to psychotherapy under whatever guise it may be practised. As a matter of fact, these patients come to us after having been operated by others and are not well and have not been well. On the other hand, many of them have been made worse, and finding out that these conditions of the stomach and colon exist, we correct them, the patients get well, and stay well. What is the lession to be taught from that? All this talk is very philosophic, and it comes with a great deal of force from Dr. Morris, because we have a profound respect for what he says, but it reminds me of an incident that occurred in a local medical society in England many years ago, when Lawson Tait was striving for recognition of his early work. Sir Spencer Wells who had, up to that time, done nothing in the way of abdominal surgery, except to remove large ovarian tumors, with a frightful mortality, arose with great profundity and said, "Mr. President, I think, sir, it is my duty to lay the hand of caution on the shoulders of undue zeal." But the man with undue zeal went on and every principle for which he contended has been accepted and has been embodied in the daily practice of the profession. I am not a prophet in my own country; but I venture to say that an acceptance of the principles for which Dr. Cole and I have contended will place both of us in that category. (Applause.)

AN OBSTETRIC ACCIDENT.

BY

H. S. LOTT, M. D.,
Winston, N. C.

The response was to a hurried call from a physician 12 miles distant, saying, "Come at once," that he had "used forceps and it seemed as if something had given way."

Reaching the home within an hour, upon examination of a multipara I found a tongue-shaped protrusion from the vagina. This was the posterior vaginal wall and from well up into the posterior vault. Introducing the hand, I found the vagina filled with intestines and found that the hand could be passed up through Douglas' pouch and into the pelvic cavity, thus holding the fundus of the uterus in its grasp. By gentle manipulation the intestines were restored and the tongue turned back into the vagina, which was then filled with a generous cotton pack, and the patient wrapped in a quilt, taken across the laps of my assistant and myself, in the rear seat of a car, and quickly driven to the hospital.

After preparation, ether anesthesia, and the removal of my pack, I found it very difficult to again restore the intestines and keep them above the fundus, but finally succeeded, and then held them there with a soft gauze wick: this brought down through the center of the rent to be subsequently used for drainage as well. Then beginning on each side at the outer vaginal wall, with No. 2 catgut, a running suture was made just to this wick on either side, thus holding in place the tongue of posterior wall which had been protruding. The wick was reinforced by an ample one, filling the vagina, and the patient put to bed, the foot of which was elevated.

For two days the wicks were not disturbed, and then by gentle traction the vaginal one was loosened and partly removed, and then each day a portion was withdrawn and cut off until the entire packing was out. Just a small one was then introduced into the cleft, which was soon shut down entirely from above, and then a hot douche of normal saline solution was given daily.

The convalescence was really uneventful; the pulse and temperature being about normal throughout the time, and the lochia was a perfectly normal one, accompanied by fairly good involution of the uterus. The patient was in the hospital for three weeks, and just before her leaving, an examination revealed a closed vaginal vault, with a running seam distinctly to be felt just behind the cervix; and the parts in about a normal condition.

In after thoughts of the case, the fact impressing me most strongly is that so very little was done with such gratifying results.

THE TREATMENT OF PROLAPSUS UTERI BY VAGINOFIXATION.

BY

EARL P. LOTHROP, M. D.,

Buffalo, N. Y.

UTERINE and vesical prolapse has been the subject of much honest endeavor by the medical profession for many decades. We read, with much interest, of the numerous mechanical devices which have been used to relieve and cure this difficulty in the past, and which, like Perkin's Tractors, have been relegated to the curio museums of medicine. It is interesting to note that the early surgical attempts, like those of the present time, were largely plastic.

Suture of the labia, cauterization of the vaginal walls, denudation and suture of the vaginal walls, were preliminary steps in the development of the classic plastic procedures of Sims and Emmett. Naturally intraperitoneal methods of treatment arose, and when the abdominal route became safe to follow, combinations of abdominal and plastic methods multiplied until it would seem that any further discussion of the subject would be unnecessary. With the swing of the pendulum, however, there has been a tendency to return to plastic procedures, and while the last word on this subject is yet to be spoken, the success attending these measures warrants us in considering them most seriously in our treatment of prolapse.

This paper will deal mainly with complete prolapse, that is to say, true pelvic hernia, for while decensus uteri and partial prolapse are amenable to the same form of treatment, they are also successfully treated by a variety of other methods, which can only be touched upon in passing.

In complete prolapse, the bladder is extruded—generally the rectum and uterus covered by everted vaginal mucosa.

Let us review briefly some of the important topographical and anatomical points bearing upon our subject. Normally the

uterus is found lying at an acute angle with the long axis of the vagina, the latter extending obliquely upward and backward toward the hollow of the sacrum.

Dudley (*Journal A. M. A.*, Nov. 17, 1906), has called attention to the importance of the acute angle between the uterine and vaginal axes in the treatment of prolapse—it being obvious that one of the conditions required for the descent is the coincidence of these axes. It is also to be noted that the levator ani, covered by the layers of fascia, forms a complete support for the pelvis—bowl-shaped and perforated by the urethra, vagina and rectum. The uterus is loosely held in position by four sets of ligaments; the round ligaments, with the uterovesical ligaments, and the peritoneal attachment of the bladder direct the fundus forward, in addition, the pressure of the abdominal contents assist in maintaining this position. The uterosacral direct the cervix backward, and the broad ligaments tend to hold the uterus up and prevent lateral inclination. These ligaments, with the exception of the round, which are muscular, are comprised of peritoneal reflexions, containing connective tissues, and some unstriped muscle fibers. They are in no sense suspensory, but act as guy ropes in restricting the mobility of the uterus.

The chief support of the uterus is the pelvic floor, and the basis of this is the levator ani and its fascia which maintains the long axis of the vagina obliquely upward and backward, so that the force of the intraabdominal pressure strikes the axis of the vagina at a right angle. These factors are mutually dependent, and upon their integrity depends what is called pelvic equilibrium.

In studying the etiology of this condition, one finds two general principles involved:

1. *Weakening of the uterine ligaments.*
2. *Weakening or injury to the pelvic floor.*

1. Weakening of the uterine ligaments may be induced by trauma or by subinvolution, tight lacing, or by the clothes binding the abdomen—too tight bandaging or prolonged dorsal decubitus after labor—in women forced to stand long periods with distended bladder, or rectum, like shop girls, in those whose occupation favors faulty posture, like stenographers or factory workers, in those with general debility or loss of tone.

These conditions put a strain upon the ligaments, resulting in their stretching, and allowing the uterus to fall backward in line with the axis of the vagina, this producing *one* of the

conditions favorable to descent. True, that many stop at this point, and this class cannot be considered in the scope of this paper, but we must not be unmindful of Kelly's dictum, that retrodisplacement is the first stage of descent.

Prolapse in virgins, not explainable by any of the above causes, is usually due to congenital defects, and will be found a part of a general ptosis of the abdominal organs.

2. Weakening or injury to the pelvic floor is self-explanatory: General relaxation, the result of repeated labors with the little lacerations which escape attention at the time, plus a cervical laceration and subinvolution, tells a story with which every one is familiar. Gross laceration of the triangular ligament or the perineal body, completes the narrative.

We may repeat in brief, that the etiological factors are those which affect and disturb pelvic equilibrium, either by increasing the weight of the uterus, stretching and weakening the ligaments, or impairing the integrity of the pelvic floor.

It follows that the principle of any operative procedure for the correction of uterine prolapse must be to restore pelvic equilibrium. This involves the correction of endometritis, if present, amputation of the cervix if badly torn or elongated, or if the weight of the organ is greatly increased, reduction of the vesical hernia, and removal of the redundant mucosa of the anterior vaginal wall; repair of the levator ani and its fascia; correction of the rectocele and repair of the perineum. It also involves shortening of the over stretched ligaments or some method of fixing the uterus so that it will lie at an acute angle with the long axis of the vagina. Unless these conditions are complied with, the result will be failure symptomatically, if not anatomically. It is assumed that other conditions such as relaxed abdominal walls, sacroiliac joint strains, etc., will be corrected.

Obviously, in selecting the method of treatment, account must be taken of the age and degree of the prolapse, and the age of the patient. In all cases, preliminary tamponade of the vagina, irrigation, attention to the elimination and general tonic treatment will not only benefit the patient, but modify our first impression of the operative indications. Preventive treatment is comprehended in the modern management of obstetric cases, and if thoroughly carried out, would lessen the frequency of this condition. We are taught that six weeks after delivery, the uterus should be involuted and in position, the vaginal canal

also involuted and that if at this time there is subinvolution, whether it be due to lacerations or general bodily conditions, it should be corrected before the patient receives her discharge. This may involve treatment by tamponade and adjustment of mechanical support, or the repair of cervical, vaginal, or perineal laceration. If this is done, we have done our full duty in the prevention of this condition.

The cases which come to us in the first few months following labor, may yield very kindly to this form of treatment, but those which have persisted for a long time, and in which decensus has become permanent, or continued down into the first stage of prolapse, require in addition to these minor measures, some procedure for shortening or staying the ligaments which have become overstretched during this period.

We are familiar with the procedures of Alexander, Montgomery, Mayo, Mann, Guilliam, Baldy, and others, for shortening the round ligaments; we are also familiar with the method of Polk and Bovee for shortening the uterosacral ligaments. The method of shortening the round ligaments through the vaginal incision devised by Goffe, is extremely valuable in connection with other plastic work on the vagina, especially if cystocele is to be repaired.

While the length of this paper will not permit of a discussion of the merits of these various procedures, it is true that each of these combinations has been followed by both successes and failures. One of the most satisfactory methods of shortening the round ligaments, is the method used by the Mayos.

Vaginal hysterectomy is advocated and practised by many surgeons. It is successful in a large degree, as is also high amputation of the uterus through the abdomen and suture of the broad ligaments to the stump.

The question is, are we justified in removing the pelvic contents, except in rare cases, to relieve this condition? This operation also fails to relieve the hernia at times. It should not be done before the menopause, and even after that period, a patient suffers less if her pelvic organs are retained.

It has been noted that the age of the patient must be considered in the selection of the operative procedure. By this, of course, one means whether the woman is in the child bearing period or not. If in the child bearing period, it would seem wise to make the plastic repair that is necessary, and either shorten the round ligaments through the vagina or utilize the Mayo method. If

the patient has passed the menopause a variety of methods present themselves, which promise success. The abdominal fixation as devised by Kelly, or modified by Graves, can be employed, but better than these, it would seem that the method of vaginal fixation first mentioned by Dühressen in 1890 would be the operation of election. There has been some dispute over the priority of this operation among the men whose names have been linked with it. Dührssen, Wertheim, Schauta, Watkins, Goffe, have all devised procedures which vary in technic, but are based on the same principle. The question of priority is one of interest, but of no practical value.

The points to be considered in regard to vagino-fixation are:

1. As to technic.
2. As to results.
3. Contraindications.

Preliminary, local and general treatment is of great value to the preparation of these cases for operation.

Tamponade, irrigation, correction of endometrical discharges or secretions from the vaginal or urethral glands wherever possible, will do much to favor primary union of the vaginal and perineal wounds.

As regards the last stage of preparation, that is to say, the final cleaning up—it is probable that painting the parts with Churchill's tincture of iodine will prove more efficient than routine scrubbing with soap and water.

Technic.—Following curetage, cervical repair or amputation, a transverse incision is made at the junction of the vagina and cervix, extending one-half the circumference of the cervix. A vertical incision in the anterior vaginal wall is carried from the middle of this incision to a point just below the urethra, and the vaginal wall separated laterally by a sponge dissection for the space of one-half to three-fourth of an inch. The bladder is separated from the uterus and pushed upward by a finger covered with gauze until it disappears into the abdominal cavity through its own power of retraction. At this point, Dührssen and American operators differ, the former insists that it shall be freed up to the ureters, the latter that no fixed line should be made, but that separation should be continued until it can be pushed up easily into the abdominal cavity. Bleeding points are to be caught and tied. The single bladed speculum is then introduced to hold the bladder up and the anterior fold of the peritoneum is picked up and incised—then torn by the fingers, making a hole

Date	Name	Age	Operation	Other operations performed at same sitting	Results	Deaths	Cause of death
10/2/09	Mrs. D.	45	Vagino-fixation.	Curettage; perineorrhaphy.....	Anatomic and symptomatic recovery.	0	
11/22/09	Mrs. P.	47	Vagino-fixation.	Curettage; rectocele; perineorrhaphy; also myomectomy. Section: Dermoid cyst of ovary size of football removed. Broad ligament attachment broken and being nourished by omentum.	Anatomic and symptomatic recovery.	0	
11/23/09	Mrs. S.	54	Vagino-fixation.	Curettage; myomectomy; perineorrhaphy.	Died 11/26/09; obstruction bowels: Abdomen opened; operation impossible.	1	Obstruction due to cancer sigmoid.
12/23/09	Mrs. M.	43	Vagino-fixation.	Curettage; perineorrhaphy; found fundus adherent to sigmoid, latter freed, raw surfaces closed.	Anatomic and symptomatic recovery.	0	
1/11/10	Mrs. O.	36	Vagino-fixation.	.....	Anatomic and symptomatic recovery.	0	
1/24/10	Mrs. T.	56	Vagino-fixation.	Curettage; perineorrhaphy.....	Anatomic and symptomatic recovery.	0	
2/19/10	Mrs. C.	56	Vagino-fixation.	Curettage; amputation cervix; perineorrhaphy.	Anatomic and symptomatic recovery.	0	
4/12/10	Mrs. M.	36	Vagino-fixation.	Curettage; perineorrhaphy.....	Anterior vaginal wall became seat of slough with some infection; positive Wassermann obtained, and specific treatment instituted; wound healed and patient recovered with great relief from previous symptoms, but without relief from pelvic pressure.	0	
5/20/10	Mrs. W.	54	Vagino-fixaton.	Curettage, large cystocele; perineorrhaphy.	Slight irritation of bladder for few weeks, otherwise perfect recovery.	0	
10/3/10	Mrs. K.	51	Vagino-fixation.	Curettage; perineorrhaphy; urethral caruncle removed by cauterization.	Anatomic and symptomatic recovery.	0	
10/8/10	Mrs. O.	65	Vagino-fixation.	Curettage; amputation of cervix; perineorrhaphy.	Anatomic and symptomatic recovery.	0	

Date	Name	Age	Operation	Other operations performed at same sitting	Results	Deaths	Cause of death
10/10/10	Mrs. M.	43	Vagino-fixation.	Curettage; perineorrhaphy; nephro-colopexy, Longyear.	Anatomic and symptomatic recov-ery.	0	
10/13/10	Mrs. D.	54	Vagino-fixation.	Curettage; perineorrhaphy	Anatomic and symptomatic recov-ery.	0	
11/17/10	Mrs. B.	42	Vagino-fixation.	Curettage; bilateral trachelorrha-phy; perineorrhaphy.	Anatomically good. 6/5/11 re-turned with irritable bladder and backache. Urine hyperacid; bladder capacity 400 c.c.; tender sacroiliac joints.	0	
11/17/10	Mrs. H.	55	Vagino-fixation.	Curettage; amputation cervix; tubes tied; perineorrhaphy.	Anatomic and symptomatic recov-ery.	0	
11/17/10	Mrs. L.	34	Vagino-fixation.	Curettage; repaired bilateral tear of cervix; perineorrhaphy; left in-guinal hernia; Longyear nephro-colopexy.	Anatomic and symptomatic recov-ery.	0	
4/27/11	Mrs. W.	41	Vagino-fixation.	Curettage; perineorrhaphy	Anatomic and symptomatic recov-ery.	0	
5/3/11	Mrs. V.	37	Vagino-fixation.	Curettage; amputation of cervix; large cystocele; tubes tied; peri-neorrhaphy.	Anatomic and symptomatic recov-ery.	0	
5/8/11	Mrs. S.	52	Vagino-fixation.	Perineorrhaphy; extensive cystocele.	Anatomic and symptomatic recov-ery.	0	
.....	Mrs. Z.	.....	Vagino-fixation.	Perineorrhaphy; extensive cysto-cele; nephrocolopexy.	Anatomic and symptomatic recov-ery.	0	
5/30/11	Mrs S.	53	Vagino-fixation.	Perineorrhaphy.....	Anatomic and symptomatic recov-ery.	0	
6/27/11	Mrs. F.	40	Vagino-fixation.	Curettage; perineorrhaphy	Anatomic and symptomatic recov-ery.	0	
7/31/11	Mrs. B.	46	Vagino-fixation.	Curettage; amputation cervix; peri-neorrhaphy.	Anatomic and symptomatic recov-ery.	0	
7/31/11	Mrs. B.	49	Vagino-fixation.	Curettage; resection fibroid fundus; perineorrhaphy.	Anatomic and symptomatic recov-ery.	0	
10/29/09	Mrs. G.	38	Vagino-fixation.	Amputation cervix.....	Anatomic and symptomatic recov-ery.	0	

large enough to allow the fundus to pass through. The fundus is grasped by a volsellum forceps and pulled through into the vagina, and the cervix is pushed backward into the vagina. In this position one can inspect the appendages, remove them if necessary, can ligate and cut the Fallopian tubes, remove small fibroids of the body, or can split the uterus and remove a portion of it to reduce weight. Some operators at this point, notably Goffe, shorten the round ligaments; one is then ready to fix the uterus to the vagina. A stitch through the vaginal flap below the urethra is passed through the fundus and then through the opposite vaginal flap. Caution is to be observed that this does not bring the fundus near enough to the urethra to produce pressure. One or more similar stitches are placed and the anterior vaginal wall closed. If the cystocele is large, the flaps are trimmed off sufficiently to close without tension. If the vagina is short, it can be lengthened by sewing the transverse incision of the cervix in the same direction. If there is much oozing, it may be wise to insert a small gauze drain in the line of suture, which should be removed in twenty-four hours.

THIS COMPLETES FIXATION.

In his original communication, Dührssen advised suturing the vesical peritoneum to the posterior uterine wall, later this was abandoned, and the American operators regard it as useless.

The above technic applies to women beyond the menopause. In the other class the fixation is made at a point opposite the internal os, so as to leave the fundus free and able to rise in the abdomen in case of conception.

The next step—*i.e.*, suturing of the levator ani and repair of the perineum, is important. Here there is greater latitude for an operator, as the principles laid down by Emmett can be carried out in a variety of ways. The suture of the torn or separated levator ani and its fascia, is the keynote of the procedure. Personally I prefer incising the junction of the mucosa and skin from the two dimples in the vulva, representing the edge of the original perineal body, dissecting the vaginal flap back and then dissecting in each lateral sulcus until the levator is exposed; the two portions of the levator ani are joined by interrupted sutures of catgut, and the body of the perineum built up to a normal degree, then the vaginal and perineal skin closed with a sub-cutaneous catgut suture. As a rule this does away with the

rectocele, but occasionally one finds it best to denude the posterior vaginal wall and suture it separately.

When the sphincter is torn, it is first repaired and then the perineum is closed.

This procedure is not original, but copied from the Mayos. Most of us belong to that great class of surgeons, known as imitators, who cannot qualify as surgeons according to the standard of the "wag" who said, "a real gynecological surgeon is one who has invented an operation, either for retroversion or lacerated perineum."

The after care of these cases is simply that of ordinary plastic operations. It is better not to catheterize the bladder as the resulting cystitis may give some trouble. A very simple way of avoiding postoperative catheterization and difficulty in defecation in bed, is to have the patient accustom herself to the use of the bed pan previous to the operation, a matter of no small importance in postoperative comfort. Patient is allowed to sit up in fourteen days.

Results.—In regard to the results of this operation, as my colleague has aptly said, opinion is divided. Some operators swear by the procedure, and some swear at it, so that one must consider carefully the source of the statistics. The report from Dührssen's clinic is naturally most enthusiastic. In the *Journal of Surgery, Gynecology and Obstetrics*, May, 1907, Dührssen states that the results of his operations are exceedingly satisfactory, and in those cases where fixation has been made opposite the internal os, labor has taken place without dystocia, and somewhere he states that from 85 to 90 per cent. of these cases are cured. In consulting the literature, it is apparent that several of our foreign friends consider themselves the author of this procedure, and their statistics are slightly at variance. In 1897 Mackenrodt reported 90 per cent. of successful cases, but he decided to abandon the operation on account of the difficulties which followed in pregnancy. Dührssen reported in 1896 twenty-eight pregnancies and seventeen normal confinements after vaginal fixation without opening the peritoneum. He also reported seventeen pregnancies where the peritoneum had been opened. One woman aborted, one case was interrupted, seven were delivered normally, and four had labor complications. At this time he reported 148 intraperitoneal fixations with one death and one relapse. He believed that dystocia was due to suturing the fundus of the uterus to the vagina, and thought it

could be avoided by sewing only the peritoneum to the fundus, and the vagina to the uterus as high as the internal os.

Watkins, in May, 1909, *Journal of Surgery, Gynecology and Obstetrics*, reports the results in forty-nine cases which he has examined. In forty-two of these cases, result was perfectly satisfactory. In the same article he reports forty-eight cases from the Mayo clinic, in which the results were good in forty-seven, one case having recurrence. The general tenor of the report seems to be that about 85 per cent. of these cases will remain cured, 15 per cent. will fail, either because the uterus is too large, or atrophied, or the pelvic floor practically destroyed, or where there is an accompanying abdominal ptosis of marked degree. It is generally conceded that the operation is easily performed with very little shock to the patient and small danger of sepsis.

The appended table gives the data of the last two years experience:

Vagino-fixation has been performed only in cases of complete prolapsus at or other the menopause, with the exception of three cases, in which future pregnancy was not to be considered. In women during the child-bearing period, or in those whose pelvic supports were so thinned and atrophied that repair was impossible after methods were employed. Most of these cases report themselves cured, and vaginal examination confirms the statements. There have been exceptions, and it is from these we have learned the most.

One patient who had an unrecognized syphilis developed a slough in the anterior vaginal line of suture, and had considerable trouble before antisyphilitic treatment was instituted. Granulations finally became established, and the wound healed leaving a small cystocele.

In a few cases hemastasis was not complete and a drain was left in the line of suture. Bleeding was quite profuse, and in two cases slight infection occurred, but without influencing the final result. One patient died.

Other operations were performed at the same sitting, such as resection of the fundus uteri for tumor, or subinvolution, tubes tied or removed. In one case an adherent colon was freed from the fundus uteri, and raw surface covered. In cases with cervical laceration without much subinvolution, repair was made; in those with much subinvolution, amputation was performed.

Our experience indicates that this operation should not be the one of election during the child-bearing period, nor in the very old cases with atrophy of the uterine and pelvic muscles; this class fortunately is rather rare.

In the class of cases at or beyond the menopause, with the above exception, it seems the operation of election. It appeals to the surgeon because of its simplicity, because it reproduces more nearly than any other procedure, normal pelvic equilibrium, and furthermore, a larger percentage of anatomic recoveries are obtained. It reproduces the relationship of the axes of the vagina and uterus—gives the bladder a firm support, and through the medium of the reconstructed pelvic floor, offers to intra-abdominal pressure a resistance that seems able to cope with it.

Abdominal ptoses occurring with prolapsus, have been corrected as part of the management of this unfortunate condition.

In conclusion, our experience has convinced us of the value of this method in the appropriate class of cases, and after reviewing the results from other methods of vaginal repair and intraperitoneal shortening of ligaments, as well as vaginal hysterectomies, ventrofixation, etc., the superiority of the method is apparent.

No claim of originality accompanies this paper. Numerous authors have been quoted, and an attempt has been made to test this method impartially and report results.

PREVENTION OF SHOCK.

BY
J. H. CARSTENS, M. D.,
Detroit, Mich.

SIMPLICITY is what I have advocated and taught at every opportunity, for the more cumbersome and complicated our technic is, the more shock we must necessarily produce, and the more time we must consume in the operation. But time, which is very often necessary, is not the only thing. I have always claimed that the nervous condition of the patient has much to do with the production of shock.

The nervous condition brings us back to the first meeting with the patient. The tact we use, the examination, and the giving of our opinion that an operation is necessary, all have their influence for good or evil.

Some people are not afraid. They have physical courage and nothing seems to phase them. Some are very timid, and, knowing that some operation will have to be performed, live for weeks and months before they see a surgeon. With tact a great deal of this fear and dread can be eliminated. Then there are some that are such cowards that anything you can say or do makes no impression on them. Now we can readily see that the management of these patients must be entirely different. People who are not afraid can be given time before the operation and can be prepared, if such preliminary preparations are beneficial, days or weeks before.

On the other hand, those who are very timid, the longer they wait for operation, the worse they get. They think of the operation all day, dream of it at night, and get themselves in such a nervous condition that they will suffer a great deal from shock.

With this type, even if weak and run down from long continued trouble, unless there are serious contraindications, I proceed to operate immediately, that is, at least, the next day; take just enough time to make the necessary blood examination, urine analysis, clear out the bowels, etc. Give them trional or codeine at night, so that they will have sleep. The next morning they can have a little weak coffee or tea or some hot water and

then be prepared by the nurse. Bathe them and comb their hair and do everything that is necessary to keep them continually thinking of everything but operation.

If they are very nervous, give them 1/4 gr. of morphine and 1/100 of atropine as a sedative and stimulant. When the patient is ready, take her quickly to the operating-room and put under the anesthetic promptly. Sometimes the surgeon is not ready, or the operating-room nurse is not ready, and the patient is kept lying in bed thinking of the dreadful ordeal that she has to pass through. This has a serious effect on the nervous system.

I am glad that Dr. Crile has been able to demonstrate the depressing effect of worry and dread, and how necessary it is to lessen this, in the prevention of shock.

I see them putting the patient on the table and then running around looking for the anesthetic, then the instruments will rattle and there is commotion all around. Then perhaps the patient is strapped down and perhaps scrubbing and shaving has been started. Thus the poor patient will get into such a nervous condition that even the anesthetic is a dangerous thing and I believe that often the deaths during the anesthetic are produced by this psychic condition.

I have actually seen them take from thirty to thirty-five minutes from the time the patient left her room until the anesthetic was started. This, to me, is horrible.

I want to have everything ready in the operating-room, the patient is put on a stretcher, rolled quickly to the operating-room, then placed on the operating-table, and instantly, as soon as she is on the operating-table the anesthetic is started.

She has no time to think of the operation because she sees so many strange sights. If you give gas, she is under it in a few minutes. Then give the ether, and now is the time to do the extra shaving and scrubbing and put him or her in the proper position for the operation. By doing this you keep the patient under the anesthetic a little longer, but it is comparatively a few minutes and I am sure that it produces far less shock, than the mental agony to which the patient is otherwise subjected.

The physician should make as perfect and clear a diagnosis as possible and have his mind made up as to what he is going to do and how he is going to do it the night before or the morning of the operation. By this forethought and the laying out of plans, he will get all the necessary instruments and the different kinds of ligatures and everything else required to do the work.

Once in a while, he may find complications, but that will not phase him if he has had any experience. He will work fast as he knows just what to do, because he has probably anticipated the complication in his review of his diagnosis. Having thus everything ready, he should work quickly. I know that many operators say speed does not amount to much, the patients do not feel, and a little more anesthetic does not hurt. But when the operation takes two or three times as long as it ought to, it seems to me that the shock is far more serious than it should be.

The trouble with some operators is, they have not made up their mind what they are going to do. They have not laid out a clear plan or action for each individual case. They slobber through it in any kind of way. Often the assistants do most of the work. Some have too many assistants. Before the assistant can find the proper instrument, I have already used it, and as a rule, before the assistant can find the needle and sutures, I have already taken several stitches.

Thus by cultivating speed and laying out the exact plan of how you are going to operate on that patient (and every case a little different from the other), and by working quickly you shorten the operation and lessen the shock very decidedly.

By speed, I do not mean superficiality and doing things only half way and improperly. You can do things as just thoroughly when you do them quickly as when you do them slowly. When the operation is finished, I believe in the routine administration of a saline enema, or when this cannot be done, the use of saline hypodermically, say a pint under each breast, or the drop method.

It is wonderful how well these patients get along. They do not suffer from thirst. The effete material and toxins developed through fear, by the anesthetic and the shock of the operation are eliminated by the kidneys and the skin to a great extent on account of the diuretic and diaphoretic action of the saline.

Some people complain a good deal of pain after the operation and I believe that that produces shock and is depressing. Morphine is made to relieve pain so I give it in small doses, 1/8 grain hypodermically. It is a dose large enough to be stimulating and large enough to relieve pain as a rule. If one dose does not relieve, I give another in an hour. If it does relieve I do not give another until the effect of the first one passes off, say four or five hours.

At night, I give 1/4 grain to produce sleep and it is repeated

in exceptional cases. By keeping the patient quiet for twenty-four hours, the system has time to eliminate the anesthetic and the patient feels relieved of his or her trouble, and has little pain.

The shock and anxiety have disappeared, simply by careful management of the case. If the stomach is irritable, it is irrigated and rested.

In conclusion:

1. By simplicity and tact in mangement before the operation, much shock is prevented.

2. Have everything ready in the operating-room, and start the anesthetic immediately.

3. Have all necessary ligatures and instruments at hand so that there need be no delay during the operation.

4. Analyze your case thoroughly beforehand, so that you know exactly what you are going to do and how you are going to do it, and what complications may arise.

5. Give 2 quarts saline enema (or hypodermically) as soon as the operation is finished.

6. Keep the patient free from pain for twenty-four hours after the operation.

THE CAUSES OF APPENDICITIS.

BY

G. K. DICKINSON, M. D.,

Surgeon to Christ Hospital and City Hospital, Jersey City; Consulting Surgeon to Bayonne City Hospital,
Jersey City, N. J.

IN the literature on appendicitis we find various attempts to explain its causation. Man is the only animal that has ever been known to suffer from this disease. He is the only animal who makes eating a pleasure, who gormandizes and overfills the intestinal tract with high proteids and who eats more than can be digested, the undigested portions proceeding to fermentation. Red meat, rotting in the intestinal tract, is a poison, and an excellent culture medium for proteolytic germs. Physicians practising in China, where red meat is seldom eaten and where a little pork, much fish, vegetables and the coarser cereals comprise the main diet, have told us that in many thousands of patients appendicitis is rarely met. There is some connection between gluttony and appendicitis, but there is a stronger connection between red meat diet and appendicitis.

Unfortunately, the term appendicitis has become applied to one variety only, whereas we have two—namely, the type which proceeds to the destruction of the appendix, gangrene, perforation, and regional or extending peritonitis (the type more commonly understood), and the chronic, which is sometimes hyperplastic, ending in fibrosis.

Within the last two years we have made careful observations on the cecum, the ileocecal junction, the cecoappendicular junction and the condition of the appendix. It is difficult to be positive in all cases as to whether or not the cecum is affected at the same time as the appendix. In the larger majority of highly vascularized conditions of the appendix we see similar conditions in the cecum. If there be an arborization of blood-vessels on the appendix we find the same on the cecum. In conjunction with acute appendicular conditions, the cecum often has a vascular cobweb, sometimes running up on to the ileum for an inch or more.

Subacute, also chronic appendicitis of the hyperplastic type, is very generally associated with a thick, leathery cecum up to and above the ileocecal junction.

Fibroid appendicitis, where the musculature has been disturbed, is often associated with a sclerosis of the walls of the cecum and much ballooning and pendancy.

Taking together the acute, subacute and chronic cases, we have found both sexes equally affected.

In practically every case of progressive destructive appendicitis the cecoappendicular junction is tubular, and the lymphoid tissue at the junction so swollen as to choke the aperture. Consequently, the appendix cannot drain itself. Tension results, and with tension the arteriocapillary pathology of gangrene or perforation.

In the hyperplastic and chronic types the cecoappendicular junction is embryonal, funicular. Drainage is good and tension does not occur.

If perchance there be repeated attacks of acute or subacute conditions on top of a chronic, scar tissue may form midway in the appendix, leading to a destruction of the distal portion.

The majority of males, for some philogenetic reason, have tubular cecoappendicular junctions. The majority of females have funicular junctions. This will account for the fact that appendicitis as written in the literature is somewhat more prevalent in males, also, for the fact that the hyperplastic or chronic type, so commonly associated with cholecystitis and gastric or duodenal ulcer, is more often seen in the female.

The writers on the acute pathology of the lower abdomen describe the destructive type of appendicitis; the writers on the chronic pathology of the upper abdomen, the chronic type.

In résumé, the sequence is:

Overeating of the high proteids.
Residuum in cecum—decomposition.
Cecoappendicitis.
Cecum draining, recovers.
Appendix not draining, goes on to destruction.
Drainage insufficient, subacute appendicitis, with hyperplasia.
Drainage good, chronic appendicitis, tending to fibrosis.

AN ANATOMICAL OPERATION FOR THE CURE OF CYSTOCELE.

BY

GEORGE R. WHITE, M. D.,

Savannah, Ga.

THE pathological conditions presented by a cystocele as given in our text books and current literature may be enumerated as follows:

1. Cystocele is due to over-stretching and thinning out of the anterior vaginal wall and other supports of the bladder which allows the bladder to descend in the form of a hernia. The condition is caused or at least increased by relaxed perineum which leaves the anterior vaginal wall unsupported.

2. The bladder is supported in part at least by its firm attachment to the uterus, and when this attachment is overstretched or broken during labor or otherwise, the bladder descends as a cystocele.

3. The bladder like the stomach and other abdominal organs is suspended by ligaments which are attached below to a relatively inelastic portion of the bladder, and above along the obliterated hypogastric arteries and the uterus.

These three theories or combinations of them are about all we find in our everyday literature regarding the conditions present in a cystocele.

It is my belief that none of them is correct, and the unsatisfactory results obtained in the treatment of cystocele is due in a large measure to a faulty conception of its cause.

Regarding the supposed thinning out of the vaginal wall, a careful examination of this membrane will show that it is not thinned out, but it is a tough thick non-elastic membrane capable of supporting considerable weight and the abnormal condition in which it is placed causes it to hypertrophy rather than atrophy. Moreover when its natural supports are restored, as described later, it fits into the space originally occupied and there is no excess of tissue. The perineum likewise has very little to do with the formation of a cystocele since the condition is rare with complete rupture of that structure.

While the uterus and the bladder are united by a firm ligament, neither organ under normal conditions gets its support from the other as evidenced by the fact that in cases of complete hysterectomy the bladder still remains in place, and possibly stays up a little better than before. Reynolds has described some bands of muscular and fibrous tissue which run from the broad ligament to the base of the bladder and top of the vagina. When the broad ligaments retract after hysterectomy these bundles are put on the stretch and the bladder and vagina are drawn up more snugly than before. Under abnormal conditions, however, the vesico-uterine ligament comes into play. When the natural supports of the bladder have been broken away the attachment to the uterus is made use of to prevent a complete prolapse of the anterior vaginal wall and the bladder; and likewise in complete uterus prolapse, the uterus attempts to make use of the vaginal supports which are not able to stand the strain and give away with the result that a marked procidentia is always accompanied by a cystocele.

The theory of the ligamentous suspension of the bladder is based upon an entirely false conception of the principles involved. No relatively inelastic portion of the base of the bladder to which the ligaments are attached has ever been demonstrated, and if the bladder were suspended like the stomach, like that organ it would descend when full instead of ascending. Moreover it has been the experience of every operator who has cut through the anterior vaginal wall that when the patient coughs or strains, the bladder is forced out of the vulva, even though the imaginary suspensory ligaments are left intact.

A few moments with the cadaver shows that the bladder stays in place because it rests upon a firm fibrous shelf stretched across between the pubic bones from the symphisis to the ischiadic spines, and pressure upon the bladder from above does not bring into prominence any suspensory ligaments nor even make tense the vesico-uterine attachment. By cutting through the peritoneum and pushing the bladder aside or removing it altogether, its supports come into view, which are none other than the anterior vaginal wall. This is attached by firm adhesions to the pubic bone in front and laterally to the whole length of the white line of the pelvic fascia with especially strong bundles of fibers springing from the spine of the ischium and becoming attached to both the anterior and posterior wall of the vagina. There are also muscular fibers extending up from the top of

the vagina to the broad ligament which are a small factor in its support. Pressure downward upon the vaginal wall brings out all these attachments which are quite firm and resistant, but with sufficient pressure the attachments break away before the membrane ruptures or stretches out, and we get a cystocele; or if we run a knife along the white line on either side and sever the attachments to the vagina, we produce a cystocele of marked degree. If we now suture the vagina back to the white line and leave it spread across from one pubic bone to the other, normal conditions are restored and the cystocele cured. It is therefore evident that the anterior vaginal wall supports the bladder, and when a cystocele occurs it is due to this structure breaking away from the attachment to the ischiadic spines and the white line, and to remedy the condition according to anatomical principles it is necessary to restore the attachment between the lateral sulci of the vagina and the white line of the pelvic fascia. The easiest and simplest way to accomplish this is to incise the peritoneum at the side of the bladder, push the bladder aside until the white line comes into view, and then by the aid of an assistant's finger in the vagina, suture the anterior lateral side of the vagina to the white line of the pelvic fascia, and close the peritoneum; but an operation of this kind is seldom indicated. The cure of a cystocele is looked upon as a vaginal operation and perhaps had better remain such for the present, especially as it always is done in connection with a perineorraphy. But when the time comes our procidentia cases will be cured by restoring or reattaching all the injured and broken structures entering into this complex condition instead of substituting new deformities or calling into service structures never designed to support the abdominal viscera and which never will do it satisfactorily. When the uterosacral and broad ligaments shall be restored with the same regard for original anatomical conditions that is accorded the pelvic fascia and levator ani muscle in the Hayd perineorraphy, I doubt not that the transperitoneal suture of the vagina to the white line of the pelvic fascia will form a part of the ideal operation for procidentia.

The suturing of the lateral vaginal fornicies to the white line per vaginam presents some difficulties owing to the depth of the parts and the necessity of operating by the sense of touch rather than by sight, though with these exceptions the technique is not especially difficult. The incision is made in the anterior lateral fornix of the vagina as near as can be judged along the

lateral edge of the bladder and extends from the level of the cervix to near the level of the internal meatus of the urethra. The bladder is separated from the vagina to a slight extent and blunt dissection is carried out toward the side of the pelvis until the finger can be placed on the uncovered ischiadic spine which is the chief landmark in the operation. Hemorrhage is not troublesome and can be controlled by sponge pressure. The sutures are all passed back of the white line by means of a Deschamps handled needle. The first one is placed just anterior to the spine and the ends drawn out through the wound. Traction on this suture brings the white line into prominence and a second and a third suture are passed back of it about half an inch apart, being always careful to clamp the ends and prevent the sutures from becoming mixed and twisted. Each end of the three or four sutures is threaded on a curved needle. One end of the suture goes through the lateral edge of the vaginal incision, the other through the median edge taking a firm hold of the vagina, when these sutures are tied snugly and the lateral fornix of the vagina is drawn up into contact with the white line. The other side is done in a similar manner and when all the sutures are tied the anterior vaginal wall stretches across from one ischiadic spine to the other. The normal shelf-like condition is reestablished, and the vagina is found to fill in the space between the pubic bones without tension. Should there be prolapse of the lower segment of the vagina the incision may be carried down alongside of the urethra and the vagina sutured to the firm fibrous tissue of the pubic bone, restoring the original supports to this portion of the bladder.

The operation sacrifices no tissues and interferes with no other operative procedure, and in my cases, both the immediate and remote, results have been most satisfactory.

THE INFLUENCE OF THE GONOCOCCUS IN THE PUERPERIUM.

BY

JAMES E. KING, M. D.,

Buffalo, N. Y.

IN considering the influence of the gonococcus upon the puerperium it is necessary to bear in mind certain accepted facts concerning the germ. Its natural habitat is mucous membrane of the columnar type. One of the most important advances in our knowledge of the gonococcus, however, came when we learned that it would thrive on tissues other than mucous membrane, and in evidence of this we find the gonorrheal arthritis, endocarditis, peritonitis and finally the gonococcus septicemia. An important characteristic of these germs, which is possessed in common with many other bacteria, is the seeming variation in virulence. The typhoid and diphtheria bacilli and the pneumococcus may be harbored by their host for long periods with impunity, but these same germs, when introduced upon new soil, may follow a rapid and destructive course. The gonococcus exhibits this same varying virulence in a very marked degree as evidenced by the gleet that results in an acute infection on new soil, and the ophthalmia of the new born from a latent gonorrhea of the mother. Whether this phenomenon is to be explained as an attenuation of the germs themselves, or by an immunity acquired by the individual harboring them, is still more or less an open question. Be this as it may, this characteristic of the gonococcus must be taken into account in explaining its influence upon the puerperium. Another well recognized fact is the difficulty of detecting this germ by smear or culture method in many cases where the clinical evidence of its presence is indisputable. This is especially true in the female. So true is it that failure to find the germ, even upon repeated examination, does not disqualify the woman as a source of infection. In acute cases its detection is simple even to those of small experience, but the known fondness of these germs to linger long and tenaciously in the quiet recesses of the tubular glands, explains the frequent failure to discover them by laboratory

methods in the subacute and chronic cases. These same germs under favoring conditions may spread to new areas or result in new infections.

Statistics relative to the frequency of the gonococcus in pregnancy and the puerperium will be found to vary somewhat. Leopold states that 20 per cent. of the pregnant women examined by him showed the germ. Krönig examined 179 puerperal women who presented temperature and found the gonococcus in 50, or 28 per cent. In the writer's hospital experience 25 per cent. of the women, examined either during pregnancy, the puerperium or following abortion, showed the germs. These figures, however, are no doubt too high for private practice.

The influence of the gonococcus upon the puerperium would seem to depend somewhat upon whether the infection is an old one, or one that is more or less recent. Clinically, therefore, the cases may be conveniently grouped under two heads, those in which the puerperium is complicated by a latent gonorrhea, and those in which the infection is acquired just prior to, or during pregnancy.

To appreciate the possible effects of a latent gonorrhea upon the puerperium one must bear in mind the influence that pregnancy has upon such cases. The marked congestion of the entire genital canal, the result of pregnancy, stimulates the resting germs of the cervix to greater activity and the result is often a profuse discharge that declares itself in the latter months of pregnancy. The effect of such cases upon the puerperium is neither marked or uniform. In the majority of instances the puerperal period gives no sign and is usually fever free. The observations of Steinbuchel testifies to this fact. He examined the discharge of 274 women who presented an absolutely normal puerperium and found the gonococcus in 18 per cent. Such cases are common in practice. While the majority of these patients give no clinical evidence of the gonococcus in the puerperal period, there is abundant proof that the puerperium favors extension of the germs and the development of adnexal disease later. The gonococci of a latent gonorrhea seem to possess for their host a lowered virulence and as a result the pathological processes following an extension in the puerperium, are usually chronic from the start. It may mean a chronic endometritis, but more frequently it invades the tubes. In the latter case the result will be most often an adhesive salpingitis of varying degree or more rarely

the formation of abscess. It is of course impossible to say just when such an invasion of the tubes takes place, but there is every reason to believe that in the great majority of instances it occurs during the six weeks of involution. Sometimes a woman may escape extension following several pregnancies only to be further invaded in a later one.

The clinical course of the latent gonorrhea in the puerperium will vary. It is seldom that the patient has the sharp attacks of an acute pelvic peritonitis. There may be pelvic pain and distress during the puerperal period, or these symptoms may not appear until the woman resumes her household duties. A profuse discharge, more or less purulent, follows the lochial flow. Frequently the pelvic manifestations are so mild that the woman does not complain, but regards her discomfort as the natural consequence of labor. Often the physician, if one is consulted, will attach but little importance to the symptoms. In the subsequent course of events a certain proportion of the women will entirely recover from all the symptoms and the only evidence of their disease will be the occluded tubes. Such cases constitute the majority of instances of "one child sterility." Another proportion will not recover, but will serve to recruit the great army of pelvic invalids and neurasthenics which fill the gynecological wards of our hospitals, or drag out a miserable existence in the home. The importance of latent gonorrhea in the puerperium is being better recognized and more careful observation is demonstrating that morbidity taking its origin during the puerperal period is not always indicated or measured by temperature.

A case of some interest, illustrating certain phases of the latent gonococcus in the puerperium, occurred in the writer's service of the County Hospital.

CASE I.—Mrs. B. aged thirty-one was married in 1904. Three months before her marriage she had a clear cut gonorrheal infection, at which time a vulvovaginal abscess formed and was opened. A little over a year later, in 1905, her first child was born after an uneventful labor. A normal puerperium and perfect health followed this labor. In 1906 a second child was born followed by a normal convalescence and good health. A third child was born in 1909. Three or four days after this labor she had pain across the lower abdomen and in the sides, which her physican told her were "after pains." She resumed her household duties, however, after three weeks, although the pain

persisted more or less, at times being quite severe. This condition existed for nearly a year until September, 1910, when she had an acute attack of pelvic peritonitis, since which, until her operation some two months later, she was confined to her bed most of the time. At operation the still suppurating sac of the old vulvovaginal abscess was excised. On the right side the ovary and a suppurating tube were removed and upon the left a much swollen, occluded and adherent tube was found. Some of the adhesions were recent and others quite dense and it is probable that in September, at the time of her acute attack, suppuration occurred in a chronic tubal condition that took its origin during the puerperium of the last labor.

Passing now to the cases of more recent gonorrheal infections, occurring just prior to, or during pregnancy, we find that the effects upon the puerperium are often more marked. We are dealing with an infection occurring at a time when the tissues are in a state of congestion, affording a most favorable field for the rapid spread and growth of the germs. As a rule the later in pregnancy the infection occurs, the more virulent it is apt to be.

The influence of this class of cases upon the puerperium presents two features for consideration. One is the influence of the discharge itself in favoring other infections during the puerperium, and the other the further invasion of the gonococcus.

The influence of recent gonococcus infections in promoting other forms of sepsis during the puerperium has long been recognized. The bactericidal property of the normal healthy vaginal secretion is a fact of paramount importance in the prophylaxis of puerperal infections. The effect of a recent gonorrheal infection is to so change the character of the normal secretion, that germs of almost any variety will grow and thrive, and examination of such a discharge will show it teeming with bacteria. Under such circumstances it is clear that examination or instrumentation during labor, may result in some one of the usual forms of sepsis. Such cases are dangerous and should be regarded as a menace.

The lesions produced during the puerperium by the recent gonorrheal infections are less marked and less frequent than might reasonably be expected. Occasionally a pus tube or ovarian abscess will develop during the puerperal period, but usually it is later that the pus makes its appearance. An abscess may develop during pregnancy without interrupting it, but during the labor or puerperium such an abscess may rupture, causing

fatal peritonitis. Davis, of Philadelphia, mentions two such cases. In this connection a case on the writer's service of the General Hospital is illustrative.

CASE II.—A young woman aged twenty entered the hospital complaining of severe pelvic pain and a profuse purulent discharge. These symptoms had existed for about seven weeks. In the early part of the attack she had had dysuria. The discharge showed the gonococcus in large numbers. Examination through a rather stout abdomen gave rise to so much pain that it was impossible to satisfactorily map out the pelvic organs, but suppuration of the right adnexa was pretty evident. Under anesthesia the uterus was discovered to be considerably enlarged. Curettage brought away an unsuspected seven-week conception. The abdomen was then opened and a suppurating tube of the right and a much swollen, adherent tube of the left side removed. Questioning this patient brought out no evidence of a long standing gonorrhea. Two months before her entrance to the hospital, however, she had had several exposures to what, she later learned, was an infected source. It was clear that her infection took place about the time she became pregnant.

It is interesting to speculate as to the possibility of the gonococcus being carried directly to the tubes with the migration of the spermatozoa that resulted in her pregnancy. It would scarcely seem possible that pregnancy in this case could have proceeded to full term, but it demonstrates the possibilities where the abscess is of less rapid development.

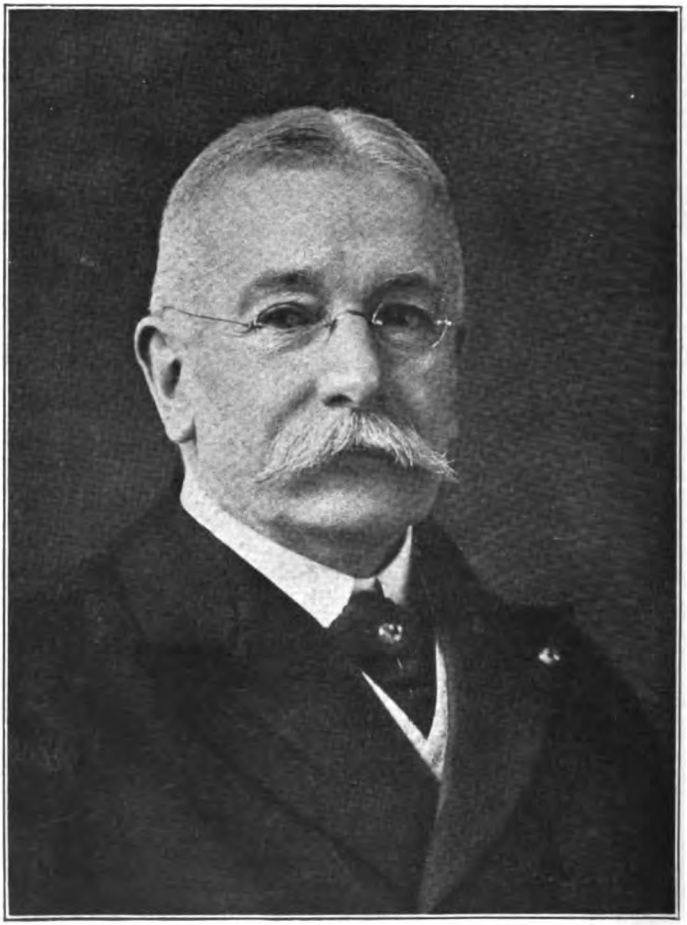
A far more uncommon manifestation of the gonococcus in the puerperium, is the septicemia. One such case has come under the writer's observation. The woman was seen in consultation and many of the details of the case are not at hand. It was determined without doubt that the husband had communicated the infection to his wife during her pregnancy. The first symptoms of a postpartum infection appeared a week after a perfectly normal labor. I saw the case one week later. There were no abdominal symptoms. A profuse vaginal discharge contained many gonococci. The blood showed the same germ in pure culture. The temperature ranged high from the first and reached 106 several times before death. It is an interesting question as to how the germ reaches the blood, whether through a wound or by way of the peritoneum and lymphatics.

In this connection the investigations of Lofaro are of interest. In a study of the blood of patients suffering from the various

forms of gonorrheal infection, he found the gonococcus in a large percentage of the cases. In the cases classed as "vulvitis and vaginitis" the germs were found in the blood in 50 per cent. In the different forms of gonorrhea in the male the percentages were still higher.

The diagnosis of puerperal gonorrhea can only be made with certainty by discovering the germs in the discharges. It must be borne in mind that such search is seldom successful during the bloody lochia. In infections of this kind, however, the character of the lochia changes in from five to seven days to the purulent type and then the germs upon careful search may be found. In doubtful cases cultural methods by a competent bacteriologist should be employed. In the presence of a mixed infection presenting the streptococcus the symptoms of infection if present, will in the vast majority of cases, be due to the streptococcus and not the gonococcus.

So far as the diagnosis from the signs and symptoms is concerned, without the detection of the germs it can only be presumptive. The temperature, as shown by Stone and McDonald in a very interesting study of seventeen cases, follows no distinctive curve, time of appearance or duration. The large majority of cases are not indicated by temperature, but its presence will usually be some indication of the severity of the invasion.



WILLIAM WARREN POTTER.

BORN DECEMBER 31, 1838. DIED MARCH 14, 1911.

IN MEMORIAM.

WILLIAM WARREN POTTER.

BY
LEWIS S. McMURTRY, M. D.,
Louisville, Ky.

THE occasion which calls us together marks the twenty-fourth anniversary of the foundation of this association. Almost a quarter of a century; a period of marvelous achievement in medicine, distinguished by great discoveries and immortal men! So many great finds have been made in medicine and surgery in this comparatively short time that we have become almost blase in accepting and applying new knowledge. Any one of numerous discoveries would have been epoch-making, and perhaps the glory of accomplishment would be more appreciated if these great achievements had been scattered along the centuries.

It has been the great privilege of men now of middle age to have witnessed and participated in a veritable revolution in the science and practice of medicine and surgery. The fellows of this society can never forget the violent and persistent opposition encountered in securing the acceptance of new principles and the adoption of new methods. To have lived to see the adoption and fulfillment of the principles they advocated and successfully applied is surely a great reward.

When this association was founded gynecology was limited almost wholly to the plastic surgery of the female genitalia as devised by Marion Sims. The work inaugurated by McDowell was in abeyance on account of the fearful mortality from sepsis, except perhaps in the hands of a few surgeons. Abdominal surgery was but little more than a suggestion, the now established methods of intraperitoneal surgery being then undetermined. In no other record can one find a more complete and accurate record of the evolution of modern gynecology and abdominal surgery than in the twenty-three volumes of Transactions of this association.

When text-books and monographs became obsolete in a few years on account of the rapid growth of technical knowledge, the special societies became the greatest sources of advanced education. By grouping a number of men working daily upon

advanced lines, and searching for truth by discussion and comparison of results, knowledge is advanced and error corrected. But the search for truth and the acquisition of knowledge are not the only beneficent purposes of such an organization as this association. Meeting annually in various sections of the Union, and always cordially inviting the profession to attend, it is a great medium for the diffusion of knowledge in this direct manner, as well as through its published proceedings. An additional important function is that the door of fellowship has always been open to the worthy aspirant for advanced work, and many have utilized this opportunity to develop and improve their knowledge in this special field of surgery. I do not believe the most exacting critic would gainsay the statement that in all these offices, extending over the most eventful period in the entire history of medicine, any special society has labored more faithfully and with prouder achievement than the organization here assembled. Its twenty-three volumes of Transactions bear testimony that is incontrovertible.

It is well known that the success of any cooperative organization is for the most part determined by its chief executive officer. The executive officer and editor of the Transactions in this association is the secretary. Under the peculiar conditions existing at the time this association was founded, it could not have survived two annual meetings without the able, devoted and tactful labors of its first secretary, who for years has been conceded *facile princeps* among such officials. This association has had but one secretary—William Warren Potter. No purely personal interest could have elicited from him more devotion, more vigilant care, or more assiduous labor than he gave to the affairs of this association. His methodical habits, his capacity for details, and his military training in early life combined to fit him especially for this work. His genial nature and unvarying courtesy made his presence welcome on every occasion. His loyalty to the association extended to its individual fellows, and his death has brought to all a keen sense of personal loss. The sorrow of parting is tempered at this time by the repeated marks of appreciation and personal esteem bestowed upon him while living by the fellows of this association. I doubt not that he often found pleasing satisfaction in the thought that through the fraternal sentiment pervading this society his memory would be cherished during the years allotted the present generation.

Dr. Potter rendered to medical science and the medical pro-

fession many valuable services through numerous channels, but the most potential and far-reaching of these services in my judgment was his work as founder, permanent secretary and editor of the Transactions of this Association.

When the medical practice act of 1890 was made effective in the state of New York, Dr. Potter was nominated by the Medical Society of the State of New York for membership on the Board of Examiners, and his name was second on the list of appointees. In 1897 when the new law went into effect, his valuable services were recognized by his unanimous election to the presidency of the Board, and he was so continued from year to year until his death. In the language of his colleagues of this Board, "he was an ideal presiding officer, thoroughly schooled in parliamentary tactics, and ever watchful of the duties reposed in him."

In 1888 Dr. Potter became the editor of the *Buffalo Medical Journal*. This journal was founded in 1845 by Austin Flint, the elder, and has held high rank among the leading monthly medical magazines in America. Dr. Potter discharged the arduous duties of editor and publisher from 1888 until he was overtaken by illness and death. He made the journal an exponent of advanced medical science and the organ of the medical profession of Buffalo and the adjacent section of the great state of New York. Punctilious in language, courteous in every utterance, with comprehensive grasp of the most recent medical literature, his editorial work was of the highest order. He made the journal a medium for diffusing the best in medical literature, and in the editorial department he constantly held aloft the standard of professional honor and achievement. It is impossible so adequately estimate the value and extent of such a service to long and so faithfully discharged, with influences so far-reaching in results.

Dr. Potter made numerous and valuable contributions to medical literature. He was among the first operators in this country to successfully extirpate a large ovarian tumor during pregnancy with recovery, and followed by delivery at full term. The report of his case, with comments, was published in the AMERICAN JOURNAL OF OBSTETRICS, and has been widely quoted in gynecological literature. In 1886 he presented a paper to the gynecological section of the American Medical Association at the annual meeting held in Cleveland, Ohio, in which he made a forceful protest against the routine use of the uterine sound, and pointed out how infection and traumatism commonly follow

exploration with this apparently simple instrument. He described other and more satisfactory means of diagnosis, and advocated the abolition of its use. This was the first time that the dangers of this instrument were publicly and specifically pointed out. The paper was considered extremely radical at that time, but later Dr. Potter's warning was endorsed by gynecologists generally and adopted in practice by the profession. All his papers were thoroughly practical and were written in the choicest language well phrased.

Throughout his entire career Dr. Potter was a close student, and the value of his early training as a military surgeon was manifest in all his undertakings. He was familiar with every new discovery as soon as published, and was always ready to accept advanced knowledge. As a practitioner he was an accurate diagnostician, and resourceful in therapeutics. His surgical work was clean and methodical. Although successful as a practitioner, in his later years he abandoned practice and devoted himself to the academic work of his official positions and his journal.

Dr. Potter was born at Strykersville, New York, and was the son of a physician. His academic education was received at Genesee College at Lima, New York. He graduated in medicine from the University of Buffalo. Two years after graduation, at the beginning of the great Civil War, he offered his services to the government, passed the examination of the Army Board at Albany, and was commissioned assistant surgeon of the forty-ninth regiment of New York volunteers. He served in the Army of the Potomac under McClellan and Burnside, and was continuously engaged in the field during the Peninsula and Antietam campaigns. While the army was retreating in 1862 he was left in charge of wounded soldiers, was captured and confined in Libby Prison. He was soon exchanged and returned to his regiment, promoted to the rank of surgeon, and served with the fifty-seventh regiment during the Chancellorsville and Gettysburg campaigns. After the battle of Gettysburg he was assigned to the first division hospital of the second army corps, and continued in the discharge of that responsible duty until the close of the war. He was brevetted Lieutenant Colonel for faithful and meritorious service by the President of the United States, and for like reasons by the Governor of New York. Retiring to civil life he practised medicine for a time at Batavia, New York, but soon removed permanently to Buffalo. During his service in

the army of the Potomac he was associated with our distinguished fellow, Dr. Albert Vander Veer, and there was formed that friendship which continued unbroken to the end.

Dr. Potter was a member of the American Medical Association (chairman of the Section of the Diseases of Women, 1890); Medical Society State of New York (president, 1891); Medical Society County of Erie (president, 1893); Buffalo Medical and Surgical Association (president, 1886); Buffalo Obstetrical Society, 1884–1886; president Section of Gynecology and Abdominal Surgery, Firt Pan-American Medical Congress, 1893; president of the National Confederation of Medical Examining and Licensing Boards, 1895–1899; secretary of the American Association of Obstetricians and Gynecologists since 1888; examiner in obstetrics and gynecology, New York State Board of Medical Examiners, and president since 1897.

Dr Potter was married on March 23, 1859, to Emily A. Bostwick, of Lancaster, New York, who died in 1906. He is survived by two daughters, Mrs. B. G. Tallman and Miss Alice Blanchard Potter, of Buffalo. His only son, Dr. Frank Hamilton Potter, a young physician of superior attainments and fine character, died in 1891.

After an illness of several weeks, Dr. Potter died in Buffalo on March 14, 1911. He received the most devoted attention of his colleagues and friends throughout his illness. The funeral services were attended by official representatives of the State Education Department; the State Board of Medical Examiners; the Medical Society of the County of Erie; the Medical Society of the State of New York; the American Association of Obstetricians and Gynecologists, and the Military Order of the Loyal Legion. In accordance with his expressed wishes, his body was cremated.

Although reared in the country and inured by military service in early manhood to the hardships of field and camp, Dr. Potter was essentially a city man. He was fond of music, of architecture, of art in general, and readily adapted himself to the changing customs of modern improvement. His literary taste was refined, and he was familiar with both classic and modern literature. He possessed delightful social qualities, was a punctilious observer of correct dress and good form upon every occasion, and consequently was a welcome addition to every company he entered. While interesting in conversation, he was always a good listener.

He was loyal to his country, loyal to his state, loyal to his

profession, and loyal to his friends. He was a genial gentleman, an honorable man, who worked through the years with an ideal always for good. He served faithfully in every position he held, and did his duty as he understood it always. He was a delightful companion, always cheery, hopeful, thoughtful, generous and kind. When his arteries were seventy, his heart was thirty. He was a brave man, and during his long and protracted illness bore himself with courage and self-control.

The writer of these lines speaks from his heart in memory of his dear friend, whose fellowship it was his privilege to enjoy through years. Of this true knight among God's noblemen we say *requiescat in pace.*

WILLIAM WARREN POTTER.

AN APPRECIATION.

BY

CHARLES A. L. REED.

FEW tasks are more difficult than satisfactorily to express an adequate and just appreciation of one the memory of whose life must always remain a cherished part of our own. Personal intimacy and personal affection necessarily imply a nearness of view that interferes with perspective, and renders difficult a just appreciation of proportions.

William Warren Potter, whose courtly manner, genial smile and warm companionship has been the chief personal feature of these gatherings for nearly a quarter of a century, is to-day the subject of your grateful memory, as he must be the theme of my brief and inadequate discourse. His life, which has meant so much to all of us during the long period of his official connection and personal identification with this organization, came to a close March 14, 1911, in the city of Buffalo, New York, after an active and useful career embracing the long span of seventy-two years.

Dr. Potter was a native of western New York, where at Strykersville, December 31, 1838, he was born, the son of Dr. Lindorf Potter and his wife, Mary Green (Blanchard) Potter. It was at a time when that part of the great Empire State had but recently been opened to the marts of the world by the completion of the Erie Canal, then as now one of the great achievements in water ways transportation of the world. There was not then, nor for several years thereafter, a railroad that, with its power and hurry, carried the traffic of our interior country to the great seaboard. But few of the country roads were macadamized at that time, and his environment at the time of his birth and during the days of his childhood was essentially that of the American frontier, that has since pushed westward until it has vanished in the tide of the Pacific.

But western New York, then relatively primitive, offered many compensations for the lack of development that it then offered. It was young, and youth, whether of man or country, is

but an aggregation of compensations for anything or everything that may be desired. It is sentient and palpitant with new life and imparts to those who come within its influence viewpoints, ideals and impulses that carry high and far on the highway of career. So it was with New York, and so it was with William Warren Potter. He went to the best schools within reach of his home and family, as good schools as there were in those days—schools with elective curricula and with characterful men at the head, organized to lay the foundations of character and give wise direction to the life that stamps with impatience to enter the race.

The hereditary bent, the parental influence, the professional environment and the temperament of one born to the manor, were doubtless jointly responsible for young Potter's selection of a career. The doctor, the country doctor in those days more possibly than now, was the hero of them to and among whom he ministered. He came, regardless of the elements, by day and by night, to ward off danger and to rescue the besieged. He, as Balzac and Watson have delineated, was the mentor of those round about him—the advisor in many things other than ills and injuries. It was this fact, I have often thought, that made the strong appeal and won to the ranks of our profession, great men, great personages of the type of Flint, and Gross, and Drake, and the hundreds of others equally entitled to a place in our enduring Hall of Fame. And it was Austin Flint, the elder, and Charles Alfred Lee, and Frank Hastings Hamilton that proved the great magnet to the young man who looked upon the world from the Arcade Seminary, and from Genesse College, and from the windows of his father's busy office in Strykersville. They were then teachers in the newly formed medical school—now, if not then, the medical department of the University of Buffalo. There was inspiration in the contact with these men, who taught the science and the art of our profession full abreast of what was then its highest development. But it was not then, nor is it now, so much the value of the concrete information as the impartation of the love of truth, the self-abnegation by which the personal is subordinated to the abstract element, the true scientific spirit by which a mistaken preconception can be cheerily surrendered in face of the evidence, even when to do so means the scorn of the multitude. These men wrought mightily in their day, and they worked upon pinnacles whence they could see and be seen by all the world. But while thus living in the very blaze of conspicuity, they taught the irrefutable lesson that the value of labor was in

its essence and not in its circumstance, and that they who wrought worthily, in modest humility, were equal in right of reward to them that labored under the fierce light. These lessons seem to have sunk deeply into young Potter's character, for we find him ever after exemplifying them in all that he did.

Throughout his entire career, he showed the quiet courage that he had seen his father display by daytime and by night in his earnest comings and goings at Strykersville; that he had seen displayed by the man who became his *beau ideal*, the man after whom he named his only and beloved son, Frank Hamilton, the Chevalier Bayard of American surgery; he had seen it shown by Flint who was blazing new roads and establishing new truths by bringing order out of the more of less chaotic therapy of that epoch; he had seen it exhibited by Charles Alfred Lee whose literary labors and whose high ethical teachings had made him a target for the small and the envious, and a model for the large and the worthy. It was not surprising, therefore, that in the midst of the fierce political controversies of the early sixties, the young surgeon, but two years away from the halls in which he had been fashioned, should stand with vigor against all doctrines, the logical outcome of which was the dissolution of the Republic as a sacrifice on the altar consecrated to man's inhumanity to man. This meant that, after the fierce rumblings of controversy, after the portentous silence of hurried preparation, when the startling crash came from the serried walls of Sumpter, there was no hesitation on the part of William Warren Potter. Among the first troops that marched to the front with set features and firm tread was he whom we honor here to-day—Assistant surgeon Potter of the forty-ninth New York volunteers. He went then, as he went ever after, to the call of duty, and right worthily did he stand to his post. We can see him now at the awful carnage of Bull's Run; we see him at his post whence the army had fled, leaving him unprotected to bind up the wounds of the fallen; we see him thus fall a captive into the pursuer's hand; we behold him in the prisoner's gang on the long road to incarceration, but fancy fails us when we try to picture him among the inmates, and a participant of all the horrors of Libby Prison. We cannot here trace that brave and chivalrous career, his exchange, his return to ranks and labor, his long campaigns, the fierce carnage of Chancellorsville and Gettysburg, up to Richmond, when after the great surrender, the last bugle call dissolved the armies engaged in that Titanic conflict. But I always like to think of him clad in

tattered uniform, turning his face triumphantly homeward, conscious of having done his full duty, going back to home and wife, to her who had been bravely with him on more than one battlefield—back, like every good American citizen, to the duties of every-day life, carrying with him thanks and honors alike from the people, from the governor of his state, and from the president of the nation that he had helped to save. And I like to think of him, too, as I had the pleasure of once seeing him only a few years ago, around the campfire of the Loyal Legion—a campfire whose embers reflected then as, thank God, it still reflects the patriot glow on the faces of assembled heroes.

When the soldier-surgeon returned to civil life, he found his first activities in the rural communities of Mount Morris, and later at Batavia in his native state. Here he labored in the same methodical way, and with the same fidelity to duty that always characterized his career. It was not long, however, until he discovered his special aptitude, and saw that his usefulness lay in the direction of gynecologic practice. This department, under the impetus of Marion Sims, Emmet and Thomas in this country, and Spencer Wells, George Granville Bantock and Lawson Tait in England, was just coming into specific recognition. It at once commanded the zealous attachment of Dr. Potter, who, that he might follow this branch of work more exclusively, went to Buffalo to practice. Here, however, was soon displayed the fact that, while man may have an intellectual appreciation of, and aptitude for, a particular calling, any temperamental tendencies of a conflicting character, being deeper and more determinative, frequently change the best conceived plans. Dr. Potter was intellectually and by training a gynecologist, but under it all was the executive, the editor and the literateur. These tendencies soon so far asserted themselves that he was induced to take over the congenial labors of the editor, and became the proprietor of the *Buffalo Medical Journal*, that many years before had begun an honorable and useful career under the elder Flint. This labor, more to his liking, pushed aside his practical work, and left him a line of activities that inured largely to the benefit of his profession. True to his early ideals, he sought to make his periodical, and did make it, one of the cleanest examples of English, one of the highest advocates of broad, progressive and sound ethics, one of the most reputable media for scientific publication among the medical periodicals of America. It furnished him, furthermore, a vantage ground of observation,

from which he viewed with keen vision the activities of his profession as a whole, not only in the nation, but particularly in his native state. His studentship of the great problems that must be solved by that profession, as a profession, enabled him to see and know that its national organization at St. Paul in 1881, perpetrated a wrong that it corrected at St. Paul in 1901—I am proud to say, under the presidency of him who addresses you now. In the interval, however, Dr. Potter, like his colleagues in the state of New York, was subjected to an unrighteous ostracism, to which he submitted with a patient forbearance always displayed by a well-balanced man who knows that he is being persecuted for righteousness sake, and who rests in tranquility upon the abiding faith that the fullness of time will bring justice in rounded measure. Dr. Potter saw this cycle nearly, but not quite, completed in the long and unhappy incident to which I have alluded. He died a few months before the event that forever wiped out the sting, if not the memory, of that great mistake. The man who was president of the Medical Society of the State of New York at the time of its expulsion from the American Medical Association in 1881, the honored Abraham Jacobi, was elected president of the American Medical Association in 1911. Thus, after three long decades, do we see the vindication of the principles for which Dr. Potter contended during all of that period.

It was this same devotion to high ideals that prompted Dr. Potter to identify himself with the long agitation for the establishment of medical examination and registration in New York, and that prompted him to accept from the Regents of the University of the state of New York a commission on that executive board, that has done more than any other one thing to bring the medical profession of that state to its present high standard. I may go further and state that, by the conspicuous success with which the medical law of New York has been administered, and by the high standards it has established and enforced, it has had a salutary and determining influence upon medical legislation in practically every other state in the Union.

Merit of the high character displayed by Dr. Potter in all of his relations sooner or later commands recognition from those who are its appreciative observers. His labors at Albany, his constant devotion to better things, his recognized ability as an executive naturally led, in due season, to his choice as the president of the Medical Society of the State of New York—a position which he filled with conspicuous ability. He once

occupied the position of chairman of the Section of Obstetrics and Gynecology of the American Medical Association. But of all his society work, of all his labor to organize and make better the profession for which he always labored, his devotion was greatest to the American Association of Obstetricians and Gynecologists.

I was not present at the meeting for organization at New York, although I was in sympathy with the movement, and, by correspondence, gained the honored distinction of being one of its founders. I know, however, that he was one of its instigators, if not the first to conceive its organization. He was elected its first secretary. Twenty-four years have elapsed, and until death removed him, the place was never occupied by any but him. Every volume of literature that has emanated from its meetings bears the stamp of his revisionary acumen, a fact which doubtless has had much to do with the appreciative cordiality with which it has been received by the profession, and, also, that it is probably the most widely quoted literature in latter day gynecology and abnominal surgery.

The limits of the time assigned to me make it impossible that I should go into each incident of his life and draw therefrom, as could easily be done, a useful and inspiring lesson for his profession, for the kindred who survive him, and especially for his two grandsons, upon whom alone devolves the privilege of transmitting his honored name to succeeding generations.

He lived and labored faithfully, day by day; he sought no other reward than the appreciation of them whom he served, and the affection of them to whom the soul naturally turns for responsive throbs. He exemplified high qualities in unostentatious ways. He was an honorable man, he was our faithful friend, and we miss him.

REMARKS ON THE LIFE AND WORK OF DR. POTTER.

BY

DR. ALBERT VANDER VEER.

DR. VANDER VEER said: Mr. President and Fellows of the Association: I did not expect to be called upon at this particular time to refer to Dr. Potter's work, but I feel that fullness of affection for him, that it seems as if I ought to take a few minutes of your time and relate something about the duties that devolved upon him in connection with the profession of the State of New York. I became acquainted with Dr. Potter in 1863. After the Battle of Gettysburg we went back into our temporary quarters for a time and organized a division medical society. Coming from the same state and working in the same division, we soon realized we were acquainted with the men of our State, and in that society, which orginated and continued through the remainder of the Civil War, our fellowship became very intimate. I did not meet Dr. Potter again until later, when as members of the State Medical Society we came in contact with each other in connection with the presentation and discussion of papers, as well as in doing the official work which came to us from time to time.

I cannot add anything to what has been said by Dr. McMurtry and Dr. Reed in regard to his life in general; but I am perhaps a little more intimately acquainted with his work in regard to the development of medical education in the State of New York. I served with him on the committee from our State society in the Legislature, and am consequently very familiar with the efforts that were made and which had to be continued for a number of years in order to establish a state board of medical examiners, and in that time I found him a personal friend. I found him persuasive in his arguments with the members of the State Legislature. I found him always loyal in his friendship, and in other ways our friendship ripened in various directions. At last, we secured a law that permitted simply the registration of physicians in our State, but Dr. Potter was one of a number of us who said this is not at all what we are after and we must

work with greater energy. Through the efforts of the State Medical Society the Legislature finally established three state boards of examiners. Dr. Potter, as has been stated, was made the president of the first board. You will all remember that the agitation continued in our State in regard to these three boards. We were very much disturbed when the osteopaths showed the amount of strength they did and the possibility of their securing an additional state board of medical examiners, and along with that we had two very impressive campaigns in which the Christian scientists presented a petition for the privilage of being recognized for the treatment of diseases, and we also had developing another sect called the neuropaths.

Dr. Potter was a member of the Committee on State Education from the three boards and together with the committee from our State Board of Regents we evolved the principle that we believe if we had one state board of medical examiners it would be the best thing, and that if the osteopaths were to be recognized by the Legislature, we believed that therapeutics should be excluded from the state examination. If the candidates of any of the other schools, except the regular, wished to take an examination in materia medica and therapeutics, they could do so, but could not prescribe unless they passed the regular examination. This met with the approval of our best senators, men of intelligent thought, and it met with the approval of the governor at the time, and this law passed. From that time on we have had one Board of State Medical Examiners. I happened to know how the last board was made up. A very careful canvas was made as to the men to be retained from the three boards, but at no time was any doubt shown in regard to Dr. Potter. He was appointed at once. He was made President of the new board of examiners, and he did his work with that same faithfulness and with that same degree of intelligence that has always characterized his work.

With Dr. Potter on the State Medical Examining Board, the Board of Regents felt safe. They felt they had a man who would protect the interest of the State. Dr. Potter was in sympathy with the changes made at that time in regard to the methods of examining students. He protected the commonwealth. He did justice to the students, and this was fully understood and gave him the confidence that was needed.

The beautiful language used in these two able addresses is nothing more than Dr. Potter deserves. His uniform courtesy,

his loyalty to duty, and his great executive ability were such that fifteen gentlemen, representing as many States, when this association was organized, thought it wise to elect him secretary. It was a most remarkable coincident, that of the number present representing these states, when the question was asked, "Who shall we elect as secretary?" two-thirds of them replied at once, that if Dr. Potter would take the position, he would make a most excellent executive officer. He was elected secretary, and all of you know of his valuable work. The last conversation I had with him was just after an executive committee meeting of the state board in Albany. He told me of his condition, but his thought was directed toward this association. He spoke of it in a very feeling manner. We are here to-day to pay him his just tribute, and let us make no mistake in following out his line of work.

IN MEMORIAM.

JOSEPH PRICE.

BY

W. KENNEDY, M. D.

JOSEPH PRICE was born in Rockingham County, Virginia, January 1, 1853. Received his early schooling at Fort Edward, N. Y; later attended Union College. Obtained his medical degree from the University of Pennsylvania in 1877. Married Miss Louise Troth, of Philadelphia, by whom he had seven children.

Dr. Price began his work in the Philadelphia Dispensary in 1877 and early became in charge of the Obstetrical Department and organized the Gynecological Department of this institution. It was his early work in the Philadelphia Dispensary that laid the first stepping-stone toward his magnificent career as a man and surgeon.

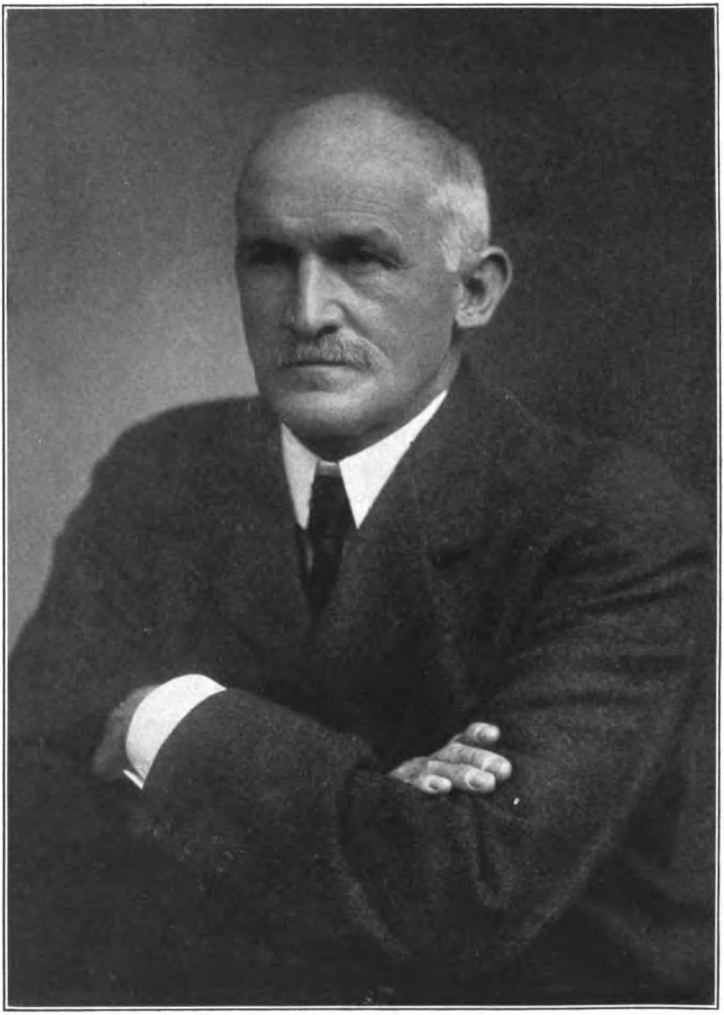
His fertile brain and tireless energy were early conspicuous by his ability as teacher and leader. The gynecological and obstetrical departments of the Philadelphia Dispensary, under his leadership, became one of the most conspicuous and largest clinics in the country.

It was during his early association with this institution, that he began his abdominal surgery, most of his work being done in the slums of Philadelphia, in the midst of filth and squalor.

He attained, in this work, at the dawn of aseptic abdominal surgery, an unequaled record of one hundred sections for pelvic suppuration, with one death. Thinking operators cannot dismiss this record. A great master of a simple technic had completely dominated his unsurgical surroundings by the most brilliant results of any age.

Dr. Lewis S. McMurtry, his life long friend and intimate associate, says: "To justly estimate the life-work of Joseph Price and measure his influence upon the development of modern pelvic and abdominal surgery, it is necessary to consider the conditions existing back in the early eighties when he entered the surgical arena.

"At that time the principles of Lister, as evolved from the researches of Pasteur, were accepted unreservedly by only a few,



JOSEPH PRICE, M. D.

Born January 1, 1853. Died June 6, 1911.

while in a half-hearted way others pretended to apply those principles in practice. The epoch-making work of Lawson Tait, while laying the foundation of modern pelvic and abdominal surgery, and replacing antisepsis with asepsis, made indescribable confusion in the surgical mind by an apparent rejection of the essential principles of Lister.

"Progress at that time was materially obstructed by an unnecessary conflict between antisepsis and asepsis, when in fact the principles enunciated by Lister as to the relation of micro-organisms to infection were the basis of every successful method of wound treatment.

"During these years the older surgeons, who occupied positions of authority, as teachers and hospital surgeons, either rejected *in toto* the new surgery, or accepted it as an experiment only. The great body of the profession, always disposed to follow established authority, was ready to discredit the claim of the innovation, and for the most part refused to accept the results of the new surgery. Not only was opposition directed against the new methods of operating, but the new pathology, especially as to infections of the Fallopian tubes, ovaries, and peritoneum, ectopic gestation, appendicitis, etc., was denied acceptance and reported cases were discredited. In a word, those established in authority resisted change, and the body of the profession was disposed to adhere to conservative methods in preference to what seemed most radical. A revolution was in progress, and, as in all periods of medical history, it was opposed by the powers in control, while those advocating the new order were maligned and abused. It was so in the days of Harvey and Jenner. When as late as in 1870 Pasteur made a visit to Von Liebig in Vienna, with the hope of demonstrating to him the marvelous results of his labors, Von Liebig, while receiving him courteously, emphatically refused to even discuss the subject with him. So it has always been, and so doubtless it will always be.

"Such were the conditions in the surgical world when Joseph Price entered upon his career. He gave his whole soul to the work. His enthusiasm was beyond control, and he became a militant advocate of the new surgery. With the courage of a Spartan, with matchless skill and judgment as an operator, he forged to the front and made an aggressive figure on every available field to establish the new surgery. It required courage; it made many enemies; but with him it was a fight for science and humanity. During the years from 1885 to 1900 he was an

imposing figure in the medical profession of America. He impressed the profession more by the spoken than the written word, and was a constant attendant upon the medical societies. He addressed county, state, and national societies; and in almost every state of the Union and also in Canada he discussed the surgical problems of the day. But his teaching was most inspiring and forceful at the operating-table. His clinic was thronged for years with young, ambitious, and progressive surgeons from every part of the United States.

"He stripped from surgery all complicated paraphernalia, and made its technic simple and thorough. Every prominent surgeon in this country to-day demonstrates in his methods the impress of this master-surgeon."

From 1887 to 1894 he had charge of the Preston Retreat, during which time there was not a death from sepsis. If his career had ceased here, he already had established an enviable record by his enthusiastic efforts to place obstetrics on an aseptic basis. His magnificant work in the Preston Retreat should not be blotted out by his exceptionally brilliant career as an abdominal surgeon. It is impossible to estimate the great service he did our profession by his early obstetrical teaching. He was founder of the Philadelphia Gynecean Hospital, where his teachings and object lessons are reflected through some of our most conspicuous operators.

In 1891 he opened his private hospital, 241 North Eighteenth Street, Philadelphia, it being the largest private institution in our country for abdominal surgery. His simple technic and masterful work in this institution is world-wide in reputation.

Could any one have had more of the necessary qualities of a surgeon than he—courage of a lion, most dexterous in his manipulations, quiet, cool, and as patient as a child when patience was a necessary virtue. He was a most esthetic and painstaking operator. He had no patience with the man who operated by the clock. He taught constantly by and through his operations, and, although never making any attempt at speed, his manipulations were without a useless move, which gave him the greatest dispatch in his work. He was so definite in his touch that many of his operations were done with the skill of a juggler, and on account of this dexterity, he was often spoken of as "The American Tait." His capacity for work was unlimited, and it is doubtful if any operator has done as much difficult abdominal surgery; he never picked his cases and never refused to give any

patient the last chance on account of his own mortality. He was a pioneer in pelvic surgery and probably did more to establish the pathology in the surgical treatment of pelvic suppurations than any man in America. His finished enucleation of tubal ovarian abscesses was classical and he was the acknowledged master of this work.

His great vigor of constitution permitted him to travel over the entire country, giving object lessons to an eager profession. He was the greatest exponent of the local hospital and no one dedicated more of these institutions throughout the land. It is impossible to estimate the great good he did the profession and laity by his constant labor to establish this local institution and place within its walls competent operators.

In plastic surgery he was an artist and beautiful demonstrator. He was one of Dr. Emmet's most ardent followers. It can be truthfully said of him, he had the combined qualities of an Emmet and a Tait.

To the hour of his death he remained the greatest advocate the country had of the so-called pathological era in abdominal surgery. His earnest pleas for early work, followed by radical toilets and ever removal of the distal infecting source, will stamp his work immortal.

He was always the refined physician and had the greatest distaste for the commercialism which threatens our ranks. The vulgar system of graft, which in recent months is worm-eating the heart out of the American profession, he viewed with great apprehension and profound regret. His ever desire to help the young physician or member in distress, was so typical of the man. His professional charity had no equal. It can be truly said that no public institution in America was more accessible to the poor, irrespective of race, than his private hospital.

Like all forceful men, he had his enemies. How unprovidential that even they should separate themselves from his benefaction.

He was President of the American Association of Obstetricians and Gynecologists in 1895.

A month prior to his death Dr. Price was given the degree LL. D. by Union College.

He died on the sixth of June, from a retroperitoneal infection, which had existed as a metastatic condition from a prior septicemia.

Exalt his skill as you justly may, but it was Price the sterling man which made him most my beloved master.

IN MEMORIAM.

CARLTON C. FREDERICK.

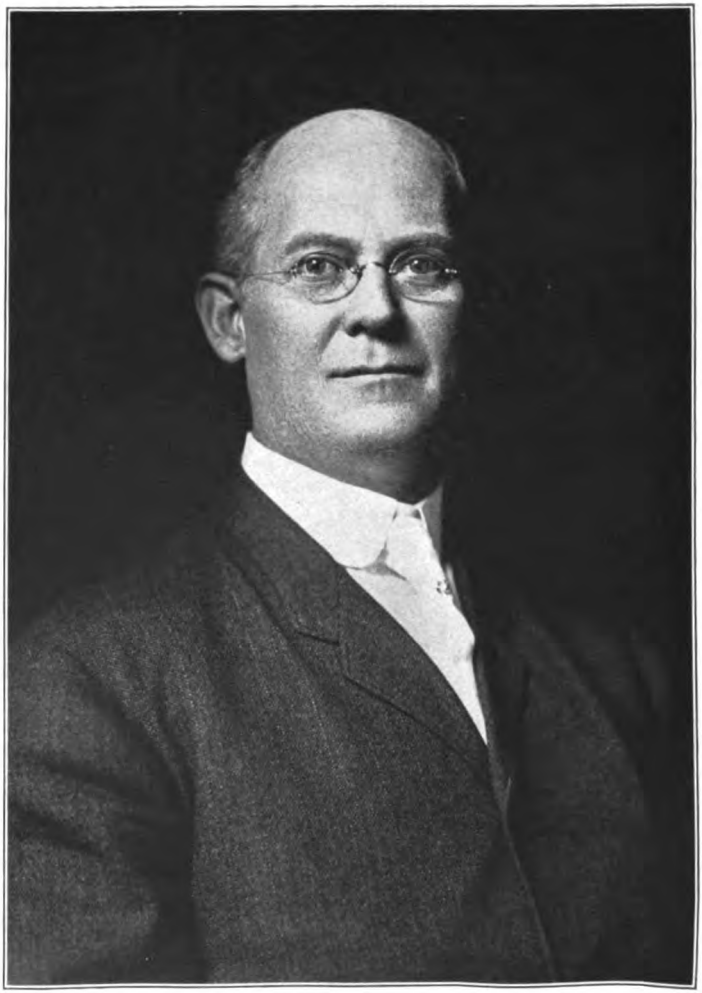
BY
HERMAN E. HAYD, M. D.,
Buffalo, N. Y.

DR. CARLTON C. FREDERICK was born in Hamburg, Erie County, New York, on May 1, 1855, and died on April 30, 1911. He came to Buffalo with his parents when fourteen years of age, and attended the public schools and the Central High School and then went to the University of Michigan, Ann Arbor, where he graduated with the Bachelor of Science degree in 1877. He then taught school for two years with Prof. Horace Briggs. In 1878 he entered the Medical Department of the University of Buffalo, and graduated in 1881. He served as interne in the Buffalo General Hospital, and while in that capacity assisted Dr. Matthew D. Mann, gynecologist and obstetrician to the hospital.

When the Niagara University started its Medical Department he joined forces with Dr. Thomas Lothrop—a deceased member and one of the founders of our association—and became associated with him in the Woman's Hospital of Buffalo, and later acquired a half interest in that institution. He was obstetrician to the St. Mary Asylum in 1885. In 1891 he went to Europe and spent some months in study in Berlin, Leipsic, Dresden and other large medical centers. He did his first abdominal operation on Novemebr 19, 1891—a double pyosalpynx—and was assisted by Dr. W. S. Tremaine, and on November 21 he did his second operation, assisted by Drs. Herman Mynter and Jacob Meyer, and from that time on his work grew until his fatal illness in April.

In his early years he had a large obstetrical practice, and was a very active general practitioner and obtained in this way a splendid foundation for his future special line of work. He was president of the Medical Association of Central New York in 1908, and president of the Buffalo Academy of Medicine at the time of his death. He was also a member of many local societies—the Medical Society of the State of New York, The American Medical Association, and the American Gynecological Society.

He was adjunct professor of obstetrics in the Medical Depart-



CARLTON CASSIUS FREDERICK, B. S., M. D.

Born May 1, 1855. Died April 30, 1911.

ment of the Niagara University, and when this school closed its doors in 1898 he became clinical professor of gynecology in the University of Buffalo.

About thirty years ago when I came to Buffalo, I first met Dr. Frederick, and early in my career I was on terms of intimate friendship with him, and, during all these years of close contact and professional association, my affection and interest grew deeper, so that I was always able to number him among my warmest and closest friends. Living as we did in the same city, and having ambitions along the same lines of practice and stimulated into competitive fields of labor by the same hopes and possible rewards, I was given the very best opportunities to know Dr. Frederick's true value as friend, rival, and ever-willing counselor, and especially so because our interests often clashed—"he got my cases and I got his." My first hospital appointment as gynecologist I held with him in the Erie County, and my private work for many years was done at the Woman's Hospital—his institution—where he always stood ready with cheerful heart and hand to help and make easy my first operative undertakings.

After a few years of general practice, our interest developed along the same lines of work, and both of us became members of this Association, he being my senior by four years. In 1891 he became an active member, and from his initiation he took a great interest in the work of the society and presented a paper—often annually—upon different practical questions which were engaging the attention of the active surgeons, and, at the same time, he took part in various discussions. His first paper was "A Plea for Consecutive Operations upon the Appendages," and in that paper he vigorously protested against the removal of the ovaries for purely functional troubles—so-called reflex disturbances—unless gross pathology could be made out by vaginal and pelvic examination. His contributions to our Transactions are many, and his papers are usually devoted to the consideration of some live subject, as "Neurasthenia Accompanying and Simulating Pelvic Diseases"; "Which is the Preferable Operative Method for Holding the Uterus in Position?" "Some Rare and Odd Cases and Experiences in Pelvic and Abdominal Surgery, and the Lessons They Teach"; etc. Perhaps no paper gave him the national reputation and showed the wealth of material and the amount of experience at his command as did that one he wrote upon the degenerations which take place in uterine fibroids, and which he read before the American Gynecological Society, in

1902. These observations attracted considerable attention, and the deductions made in this paper stimulated a greater interest in this subject, and his statistics were quoted and commented upon by many writers in this important field of work. As a member of our Association he became distinguished, and men listened to what he had to say because it represented advanced work in pelvic and abdominal surgery; and secondly, because he was a practical, thoroughly honest, conscientious man and of good judgment. His personal characteristics, sweetness of temper and suavity of manner brought to him many close relations in the Society. Men looked upon him as a fair and honorable colleague. He possessed the happy faculty of being forceful and energetic, but yet considerate of the opinions and feelings of others. He was fearless, but not tyrannical. He was kind, but not obsequious. He was self-appreciative and reliant, but not conceited and boastful, and in debate and scientific discussions he was temperate, persuasive, practical and resourceful. In his home his relations were beautiful. He was always a loving and thoughtful husband, a tender and affectionate father. He leaves a widow, and one daughter twenty-three years old, and one son seventeen years old.

As a surgeon in our community he had a very large clientèle and was loved by every one and he enjoyed the confidence of the public and his brother physicians. He was a brilliant operator—quick, cool, resourceful, practical, and bold, but yet honest and conservative. He was a painstaking teacher, and the students enjoyed his clinics and practical talks and demonstrations. Unfortunately, at the height of his usefulness, when only fifty-six years of age, when the suffering and afflicted could most have benefited from his trained mind and experienced hand and when the young surgeon could have called upon a responsive and sympathetic friend and helper in times of worry and distress, Dr. Frederick is suddenly and prematurely taken from us.

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